STR-110

Set using ISO screws

CANADA and General Export Model

SONY

SERVICE MANUAL

STR-110

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SERVICING NOTES

1. In this set, "wire-wrap" connections are employed as shown in Fig. A. In case a wire breaks, simply solder the lead wire directly to the terminal post.
   Wire-wrap connection cannot be properly made by hand.
2. Care should be taken not to cut too deep when removing the insulation from wire.
   Even the slightest nick in the copper wire will weaken the wire enough to eventually cause a break at that point. Use a soldering iron to remove the insulation.
3. Note that the safety regulation requires all the connection points; where more than 30 volts ac is supplied such as power switch, ac outlet, should perform wrap-around joint as shown in Fig. B.
4. In the power amplifier board, all the components as listed below should be stand off from the surface of PCB by using insulating tube to meet the safety regulation as shown in Fig. C.
   Diodes: D501, D502
   Resistors: R524, R525, R713, R714, R753, R754
5. When performing electrical check or replacement of some component on preamplifier/power supply board without removing the board, remove the dial lamp shade by straighten the tab as shown in Fig. D.

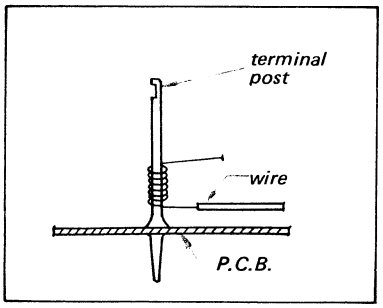


Fig. A "Wire wrap" connection

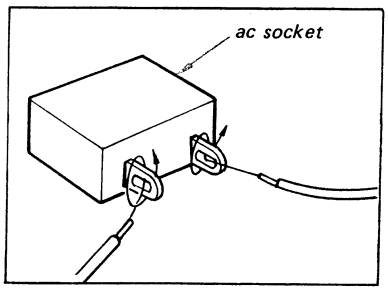


Fig. B Wrap-around joint

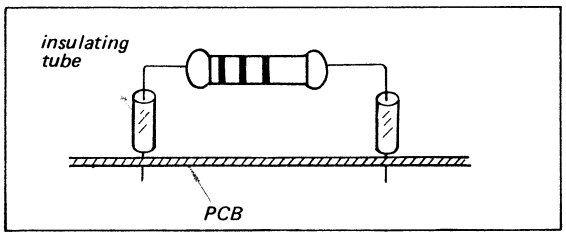


Fig. C Stand off component

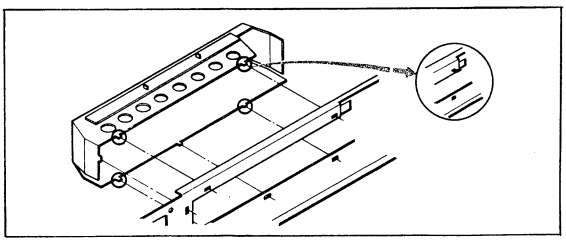


Fig. D Dial lamp shade removal

SECTION 1
TECHNICAL DESCRIPTION

1-1. TECHNICAL SPECIFICATIONS

Technical specifications for the STR-110 are listed in Table 1-1.

TABLE 1-1. STR-110 TECHNICAL SPECIFICATIONS

Fm Tuner Section

Antenna:	300 ohms balanced
Frequency range:	87.5 to 108 MHz
Intermediate frequency:	10.7 MHz
Usable sensitivity:	2.2 μV (S/N = 30 dB)
Signal-to-noise ratio:	65 dB, IHF
Capture ratio:	4 dB, IHF
Selectivity:	35 dB, IHF
Image rejection:	40 dB
I-f rejection:	90 dB
A-m suppression:	45 dB
Frequency response:	20 to 15,000 Hz ±3 dB
Harmonic distortion:	Mono: 0.5% at 400 Hz Stereo: 1.0% at 400 Hz
Fm-stereo separation:	Greater than 35 dB at 400 Hz
19-kHz, 38-kHz suppression:	45 dB

A-m Tuner Section

Frequency range:	530 to 1,605 kHz
Intermediate frequency:	455 kHz
Sensitivity:	48 dB/m, built-in antenna 20 μV, external antenna
Signal-to-noise ratio:	50 dB
Image rejection:	40 dB at 600 kHz 35 dB at 1,400 kHz
I-f rejection:	40 dB at 1,000 kHz
Harmonic distortion:	0.8%

Audio Amplifier Section

Dynamic power: (IHF constant power supply method)	10 watts, both channels operating, 8 ohms, 5% THD
Music power output: (EIA)	10 watts total
Continuous RMS power:	3 watts, per channel, both channels operating, 8 ohms
Harmonic distortion:	Less than 5.0% at 1 kHz at rated output
Frequency response:	TAPE, REC/PB ※: 50 Hz to 30 kHz (±3 dB) at 1-watt output
Input sensitivity and impedance:	PHONO: 300 mV, 3.6 M ohms TAPE: 400 mV, 100 k ohms
Signal output:	REC OUT: 250 mV, 10 k ohms
Signal-to-noise ratio (IHF (B) network):	PHONO: greater than 50 dB TAPE: greater than 55 dB ※ REC/PB: greater than 55 dB
Tone controls:	BASS: ±10 dB at 100 Hz TREBLE: ±10 dB at 10 kHz (※ General Export Model only)

General

Power consumption:	27 watts
Power requirement:	120 V 60 Hz ac (CANADA Model) 100, 120, 220, 240 V 50/60 Hz ac (General Export Model)
Dimensions:	16½" (width) x 4½" (height) x 12½" (depth) 420 mm (width) x 116 mm (height) x 312 mm (depth)
Net weight:	12 lb (5.6 kg)
Shipping weight:	17 lb (7.6 kg)

1-2. ANALYSIS FOR NEWLY ADAPTED CIRCUIT

1. Fm/A-m I-f Strip

Notice that the RC coupled amplifier Q202 and tuned amplifier Q203 form an fm/a-m i-f amplifier stage. Changeover for tuned circuit is not necessary because of the wide difference in the intermediate frequencies. But dc bias changeover circuit for these amplifiers is provided to permit the proper operation both at fm and a-m i-f signal amplification. Reffering to partial schematic diagram Fig. 1-1, dc bias changeover operation is performed by switching S1 ~ 7 (FUNCTION switch). In A-M mode, bias voltage is supplied through R237, R242. This holdes the collector current of Q202 to 0.3 mA and Q203 to 2 mA, permitting proper amplification for a-m i-f signals. In FM mode, bias voltage is now supplied through paralleled circuit of R237/R238, R242/R244. This increases bias current ensuring limiter response in fm mode.

2. MPX Decoder Circuit

(a) Subchannel boost circuit
R302 and C301 form a subchannel signal boost circuit (high pass filter) and inserted between SCA trap and base circuit of Q301 (19 kHz amplifier). This upgrades the channel separation without employing negative-feedback type cancellation circuit. See Fig. 1-2.

(b) Frequency doubler circuit
Q302 and tuned circuit in the collector circuit forms a frequency doubler circuit. Input 19 kHz signal is rectified between base-emitter junction and amplified at Q302 since it operates as class "C" amplifier. As 19 kHz pulses in the base circuit includes its higher-order harmonics, tank circuit tuned to 38 kHz is inserted in the collector to restore 38 kHz sinusoidal waveform. This signal is transformer coupled to bridge-type demodulator to supply sampling drive for the demodulator. See Fig. 1-2.

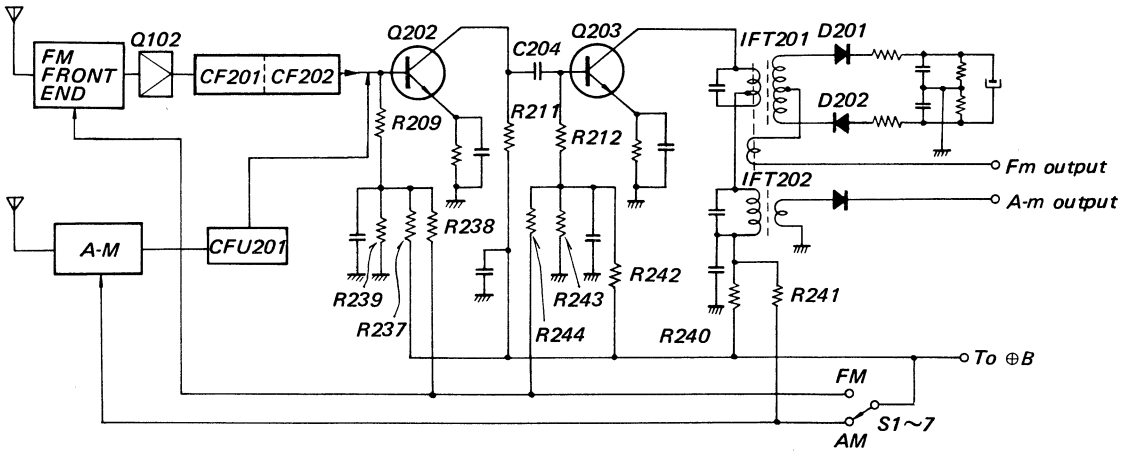


Fig. 1-1. Partial schematic diagram of fm/a-m i-f strip

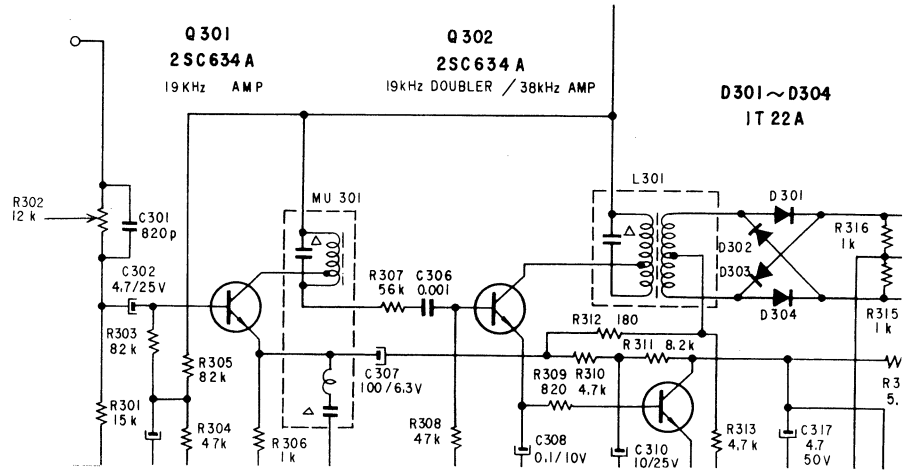
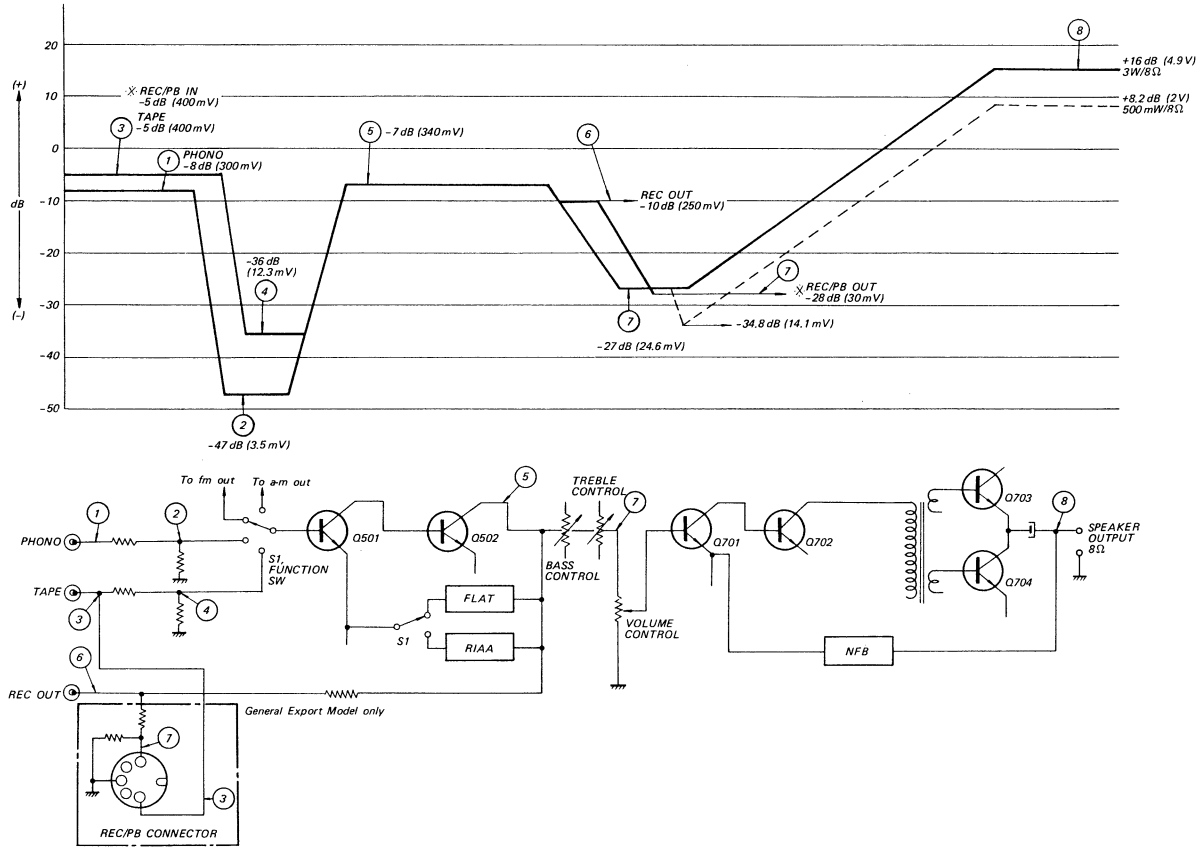


Fig. 1-2. Partial schematic diagram of MPX decoder

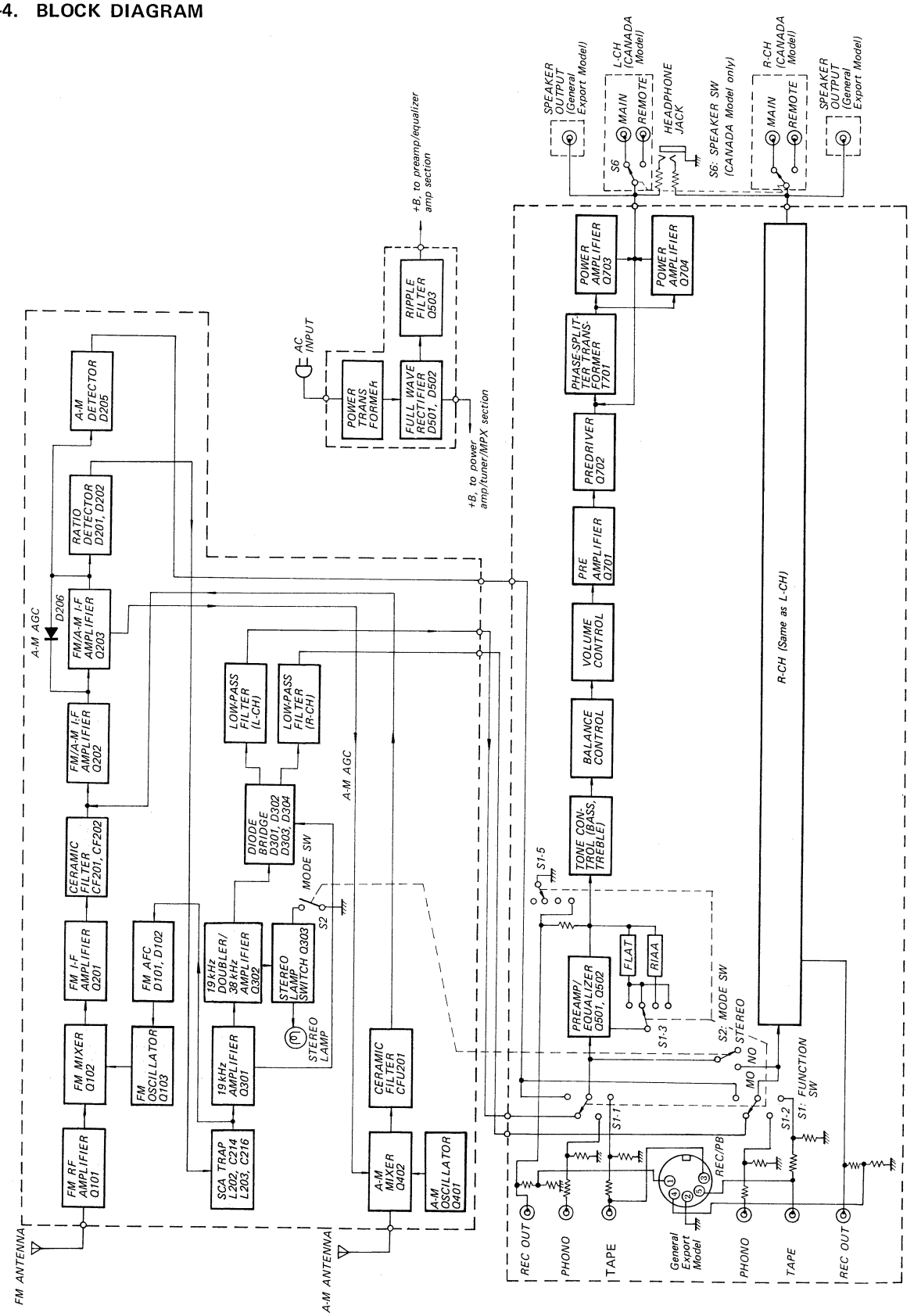
1-3. LEVEL DIAGRAM

Note: Signal voltage are measured with ac VTVM and expressed in dB referred to 0.775V, 1 kHz.

※ General Export Model only



1-4. BLOCK DIAGRAM



SECTION 2
DISASSEMBLY AND REPLACEMENT PROCEDURES

WARNING

Unplug the ac power cord before starting any disassembly or replacement procedures.

2-1. TOOLS REQUIRED

The following tools are required to perform disassembly and replacement procedures on the STR-110.

Screwdriver, Phillips-head
Screwdriver, 4-inch cabinet
Wrench, 6-inch adjustable
Cardboard, 3-inch-square
Protective pad
Cellophane tape
Soldering iron, 40 to 150 watts
Cement, contact
Cement solvent
Diagonal cutters
Pliers, long-nose
Soldering tool, wire-brush end
Tweezers, 6-inch
Tape, electrical
Silicone grease
Nutdriver, 3-mm
Solder, rosin-core

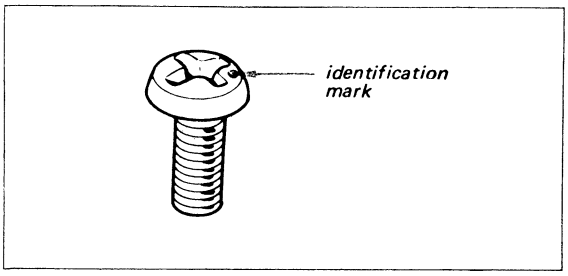


Fig. 2-1. ISO screw

2-2. HARDWARE IDENTIFICATION GUIDE

The following chart will help you to decipher the hardware codes given in this service manual.

Note: All screws in the STR-110 are manufactured to the specifications of International Organization for Standardization (ISO). This means that the new and old screws are not interchangeable because ISO screws have a different number of threads per mm compared to the old ones. The ISO screws have an identification mark on their heads as shown in Fig. 2-1.

– Hardware Nomenclature –

P – Pan Head Screw .....
PS – Pan Head Screw with Spring Washer .....
K – Flat Countersunk Head Screw ...
B – Binding Head Screw .....
RK – Oval Countersunk Head Screw ..
T – Truss Head Screw .....
R – Round Head Screw .....
F – Flat Fillister Head Screw .....
SC – Set Screw .....
E – Retaining Ring (E Washer) .....

W – Washer
SW – Spring Washer
LW – Lock Washer
N – Nut

– Example –

⊕ P 3×10
- P – Type of Head
- 3 – Diameter in mm (D)
- 10 – Length in mm (L)

2-3. WOODEN CASE REMOVAL

1. Remove the eight screws from the bottom and the two self-tapping screws from the rear hardboard as illustrated.

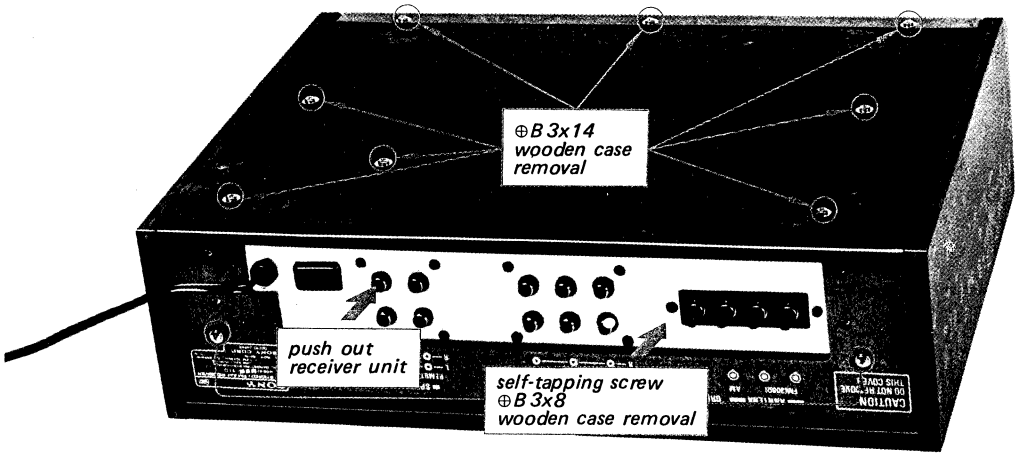


Fig. 2-2. Wooden case removal

2-4. FRONT PANEL REMOVAL

1. Remove the wooden case as described in Procedure 2-3.
2. Remove all the control knobs by pulling them off.
3. Remove the two self-tapping screws (⊕B 3x6) and two nuts (3 mm dia.) securing the front panel to the front subchassis as shown in Fig. 2-3.

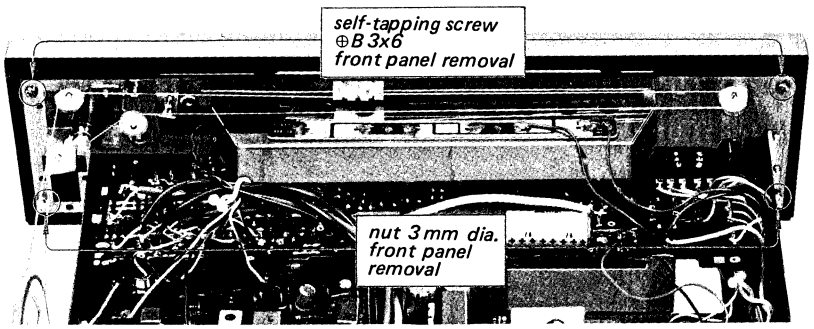


Fig. 2-3. Front panel removal

2-5. DIAL-CORD RESTRINGING

Preparation

1. Remove the wooden case as described in Procedures 2-3.
2. Cut a 63-inch (1,600 mm) length of 1/64-inch (0.3 mm) diameter dial cord.
3. Tie the end of the cord to a spring as shown in Fig. 2-4.
4. Rotate the tuning-capacitor drive drum fully counterclockwise (maximum capacitance position).

Procedure

While referring to Fig. 2-5 proceed as follows:

1. Hook the spring to one hole of the drive drum as shown in Fig. 2-6, and then squeeze it.
2. Run the cord through the slot in the rim of the drum and wrap a counterclockwise turn in the inner side groove. See Fig. 2-7.
3. Run the cord over pulleys "A" "B", "C" and then wrap two clockwise turns around the tuning shaft.
4. Run the cord over pulley "D" and then wrap half turn around the drum from outer groove to inner groove as shown in Fig. 2-5 and Fig. 2-7.
5. Pass the doubled end of the cord through the eyelet (See Fig. 2-8), then hook it to the spring as shown in Fig. 2-9.
6. Tighten the cord, then squeeze the eyelet so that the spring is under tension.
   Make a knot in the cord end to keep it from slipping out of the eyelet. See Fig. 2-8.
7. After completing the dial-cord stringing, make sure that the tuning system works properly. Apply a drop of contact cement to the knots. Perform the mechanical dial calibration.

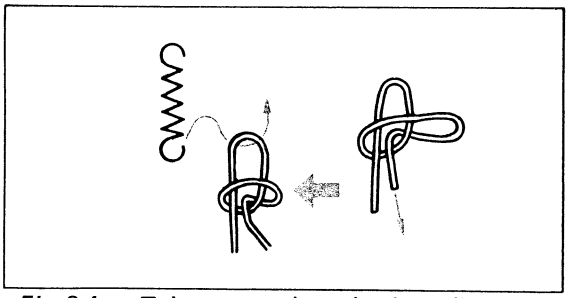


Fig. 2-4. Tying square knot in the coil spring

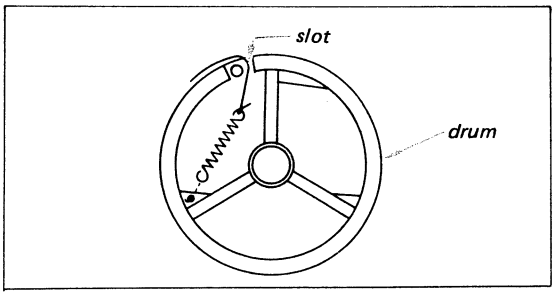


Fig. 2-6. Coil spring installation

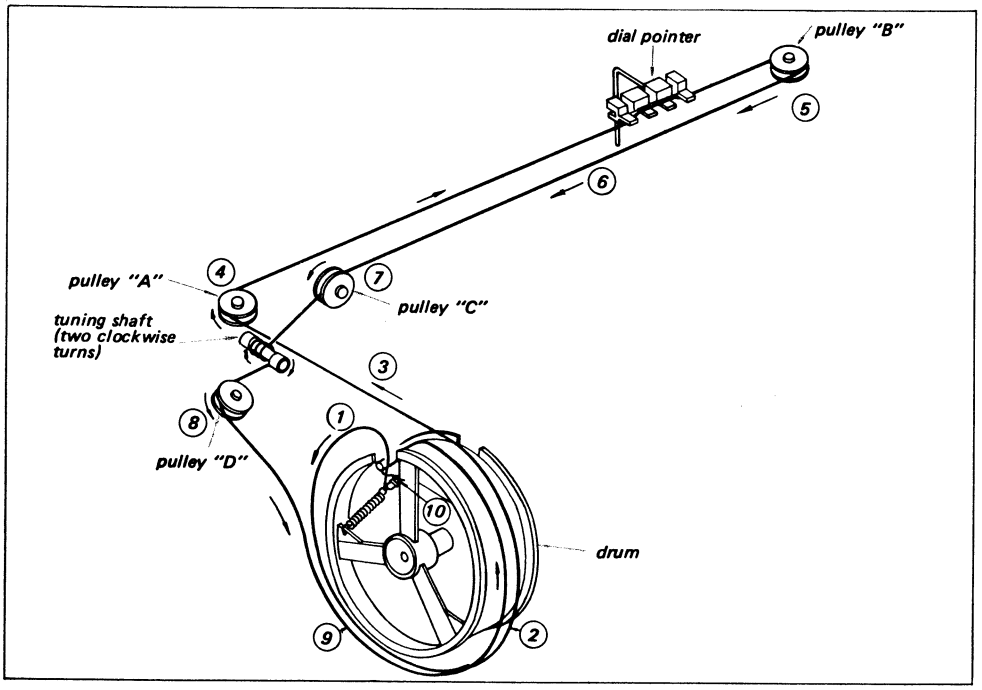


Fig. 2-5. Dial cord stringing

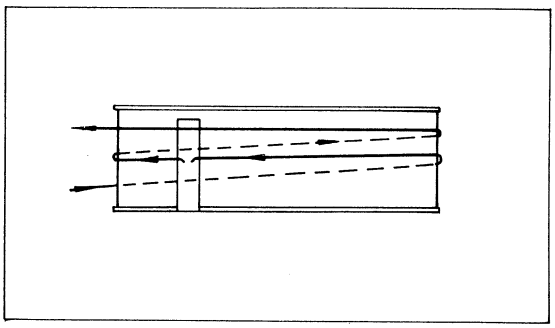


Fig. 2-7. Wrapping the dial cord

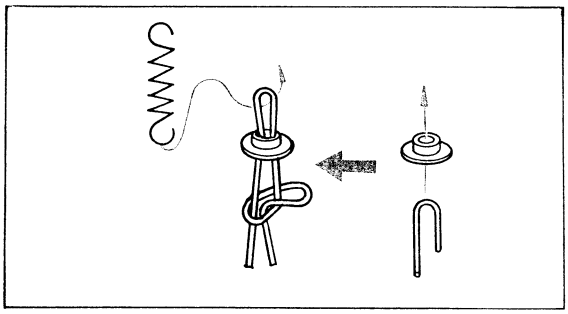


Fig. 2-8. Detail of dial cord finish

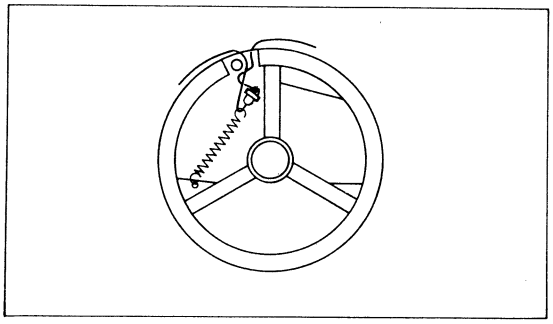


Fig. 2-9. End of dial cord stringing

2-6. MECHANICAL DIAL CALIBRATION

Note: This is required after replacing the dial cord.

1. Put the dial pointer on the cord as shown in Fig. 2-10, and move it to a position where the pointer coincides with the 530 kHz mark on the dial scale in the front subchassis as shown in Fig. 2-11, when the tuning capacitor is set to the maximum capacitance position.

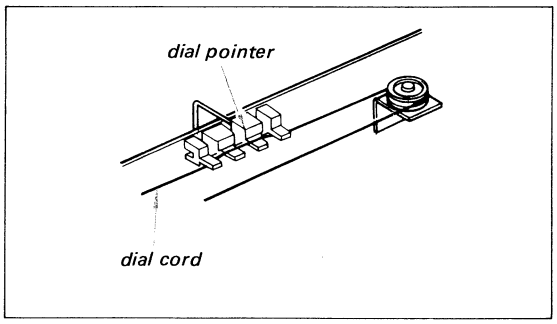


Fig. 2-10. Dial pointer installation

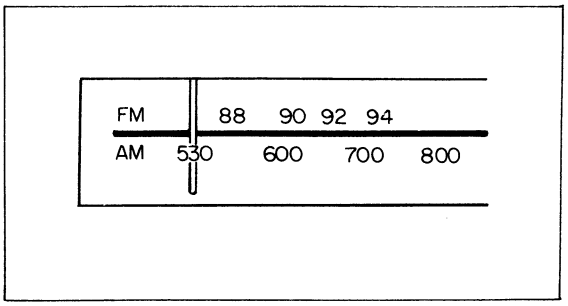


Fig. 2-11. Mechanical dial calibration

2-7. DIAL LAMP REPLACEMENT

1. Straighten the tab of the dial lamp shade to permit to removal of 3-p lamp holder as shown in Fig. 2-12. This frees dial lamp holder.
2. Remove the defective dial lamp, and then install the new one.

2-8. REPLACEMENT OF COMPONENTS SECURED TO THE REAR PANEL BY NYLON RIVETS

1. Remove the nylon rivets securing the defective component by pushing its end with a tweezers as shown in Fig. 2-13.
2. Remove the defective component and then install a new one.
3. To reinstall the rivet, insert the flared part into the opening first, and then push the head as far as it goes as shown in Fig. 2-14.

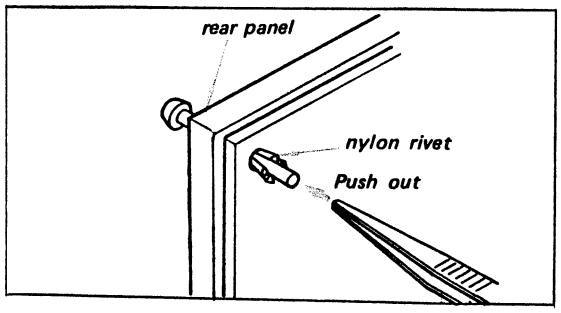


Fig. 2-13.

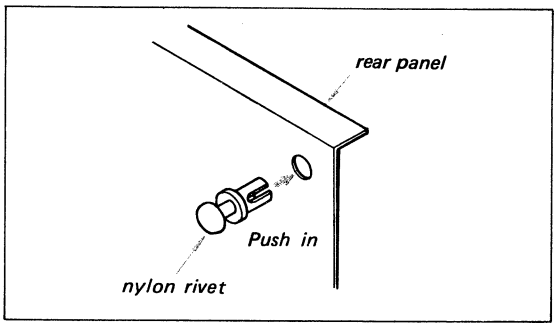


Fig. 2-14.

2-9. SWITCH AND CONTROL REPLACEMENT

Preparation

1 Remove the front panel as described in Procedure 2-4.

2. Fasten the dial cord to the drum or pulleys with cellophane tape.

Procedure

1. Remove the five screws (⊕B 3x6) securing the front subchassis to the chassis as shown in Fig. 2-15. This frees front subchassis as shown in Fig. 2-16.
2. Remove all the hex nuts and screws securing switches or controls to the front subchassis. This frees preamplifier/power supply board.
3. With a soldering iron having a solder-sucking tip, clean the solder from each lug of the defective switch or control and the printed board.

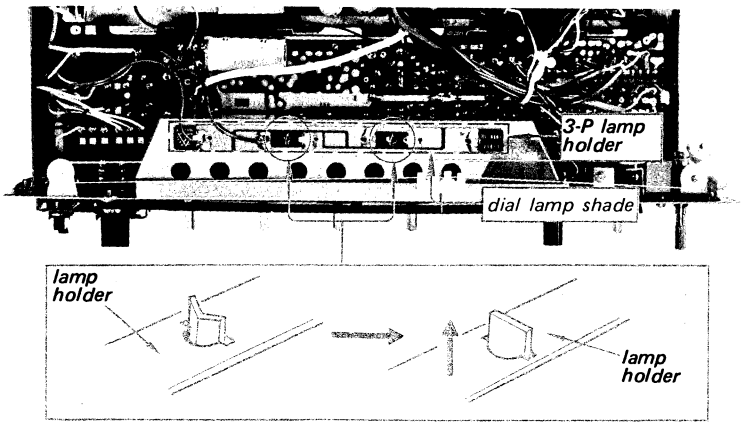


Fig. 2-12. Dial lamp replacement

4. Remove the defective component and then install a new one.

2-10. POWER TRANSISTOR REPLACEMENT

1. Remove the two screws and retaining bracket securing the defective power transistor to the heat sink and PCB as shown in Fig. 2-17.
2. Unsolder the leads of power transistor, and then install the new one.
3. When replacing the power transistor, apply a coating of a heat-transferring grease to both sides of the insulating mica spacer. Any excess grease squeezed out when the mounting screws are tightened should be wiped off with a clean cloth. This prevents it from accumulating conductive dust particles that might eventually cause a short.

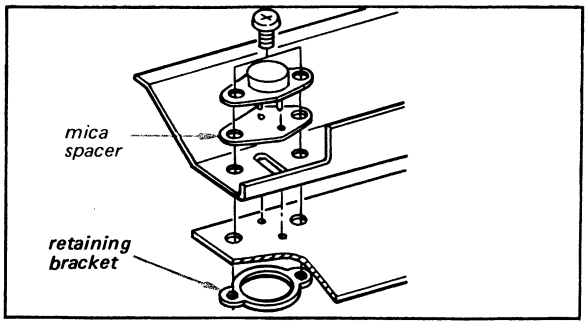


Fig. 2-17. Power transistor replacement

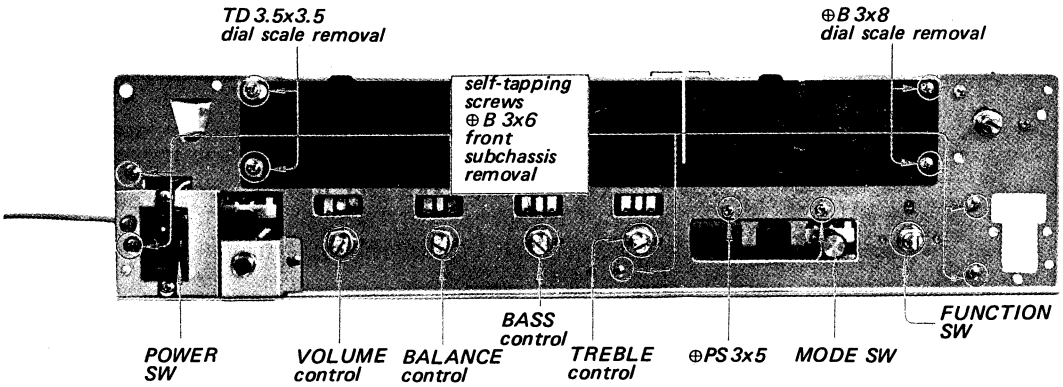


Fig. 2-15. Switch and control replacement

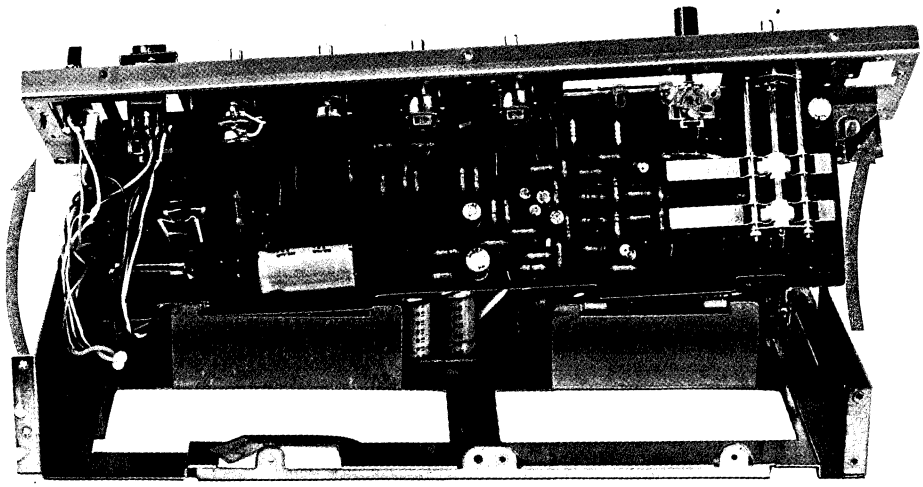
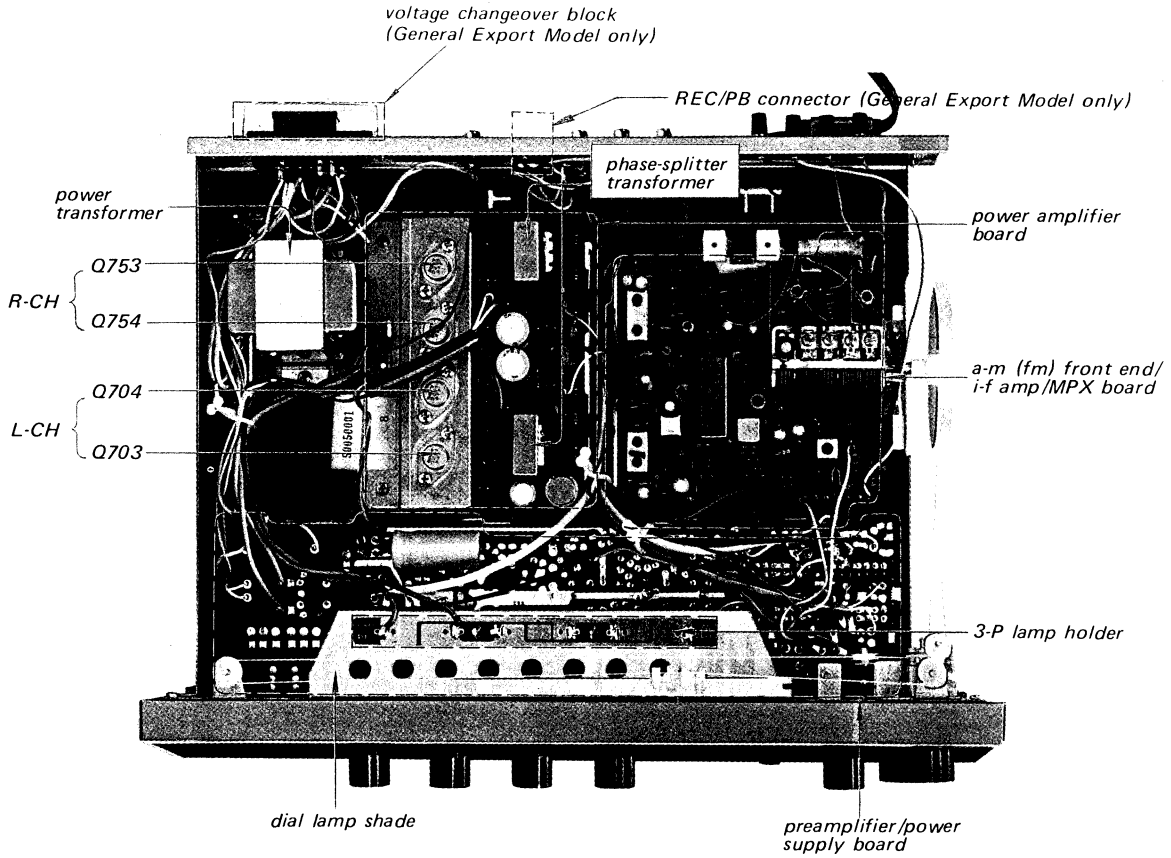


Fig. 2-16. Front subchassis removal

2-11. CHASSIS LAYOUT



SECTION 3
ALIGNMENT AND ADJUSTMENT PROCEDURES

3-1. FM I-F AND DISCRIMINATOR ALIGNMENT

CAUTION

The ceramic filters in the fm i-f circuit are selected according to their specified center frequencies and color coded as shown in Fig. 3-1 and listed in Table 3-1. Check the color code of the filters to identify the same center frequency when replacing any of these filters.

TABLE 3-1.

FM I-F CERAMIC FILTERS

Part No.	*Color*	*Specified Center Freq.*
1-403-562-11	red	10.70 MHz
1-403-562-21	black	10.66 MHz
1-403-562-31	white	10.74 MHz
1-403-562-41	green	10.62 MHz
1-403-562-51	yellow	10.78 MHz

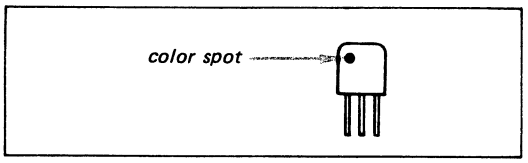


Fig. 3-1. Color dot on ceramic filter

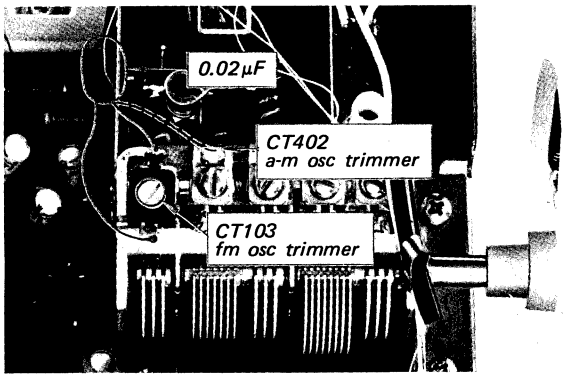


Fig. 3-2. Interruption of fm or a-m local oscillator operation

Note: Local oscillator should be killed when performing this alignment. To stop the local oscillator's operation, shunt the oscillator capacitor with a 0.02μF capacitor. See Fig. 3-2.

Signal Generator Alignment

Test Equipment Required

1. Standard signal generator which can generate a 10.7-MHz a-m/fm signal.
2. Oscilloscope
   Vertical sensitivity..... 100 mV/cm minimum
3. Alignment tools

Preparation

1. Connect the input cable of the oscilloscope with alligator clips to C217 and ground on the tuner and MPX board, and solder a 0.02μF capacitor across these clips, as shown in Fig. 3-3.
2. Connect the output cable of the generator across CV102 on the tuner and MPX board. Use alligator clips and make the connection through a 0.02μF coupling capacitor as shown in Fig. 3-4.

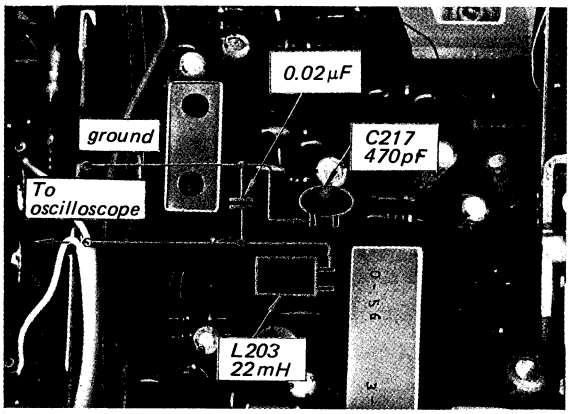


Fig. 3-3. Fm discriminator output connection

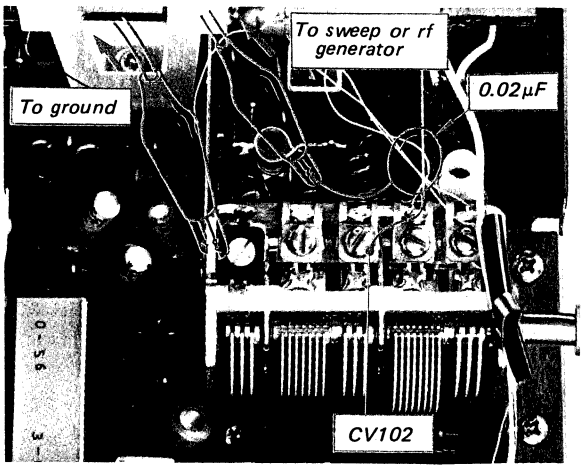


Fig. 3-4. 10.7MHz signal injection

Procedure

1. With the equipment connected as shown in Fig. 3-5, set the signal-generator's controls as follows:

   Frequency ..... Specified frequency of ceramic filter. See Table 3-1.
   Modulation ..... Fm, 400 Hz, 100% (75 kHz)
   Output level ..... 1,000 μV (60 dB)

2. Set the receiver's controls as follows:

   FUNCTION switch .... FM AUTO ST
   VOLUME control ..... Minimum

3. Adjust the signal generator's frequency slightly to obtain a maximum output, and then change the signal generator's modulation to a-m, 400 Hz 30%.

4. If the discriminator transformer IFT201 is not aligned correctly, 400-Hz ripple will be observed as shown in Fig. 3-6.

5. Turn the secondary side core (green) of discriminator transformer IFT201 (see Fig. 3-12) with an alignment tool to obtain a minimum indication on the oscilloscope as shown in Fig. 3-6.

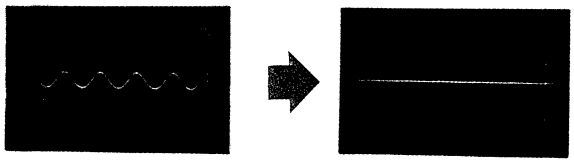


Fig. 3-6. Fm discriminator alignment output response

Note: Turn the core carefully and slowly because the output appearing on the oscilloscope jumps up and down when turning the core. This might cause difficulty in determining the point of minimum output.
Also, at both extreme positions of the top core, decreased output will be observed. The real null point should be obtained in the middle of the core thread length, and maximum output occurs at each side of the true null point.

6. Change the signal generator's modulation to fm, 400 Hz 100% (75 kHz).

7. Turn the core of fm IFT101 and primary side core (brown) of discriminator transformer IFT201 (see Fig. 3-12), to obtain the maximum output.

3-2. FM FREQUENCY COVERAGE AND TRACKING ALIGNMENT

Note: Before starting this alignment, the fm i-f and discriminator alignment should be performed.

Test Equipment Required

1. Standard fm signal generator
2. Ac VTVM
3. Alignment tools

Preparation

1. Connect the equipment as shown in Fig. 3-8.
2. Set the receiver's controls as follows:

   FUNCTION switch .... FM AUTO ST
   VOLUME control ..... Minimum

3. Short the connection point of R114 and C118 (AFC circuit) to ground as shown in Fig. 3-7.

Generator Alignment

Follow the procedures given in Table 3-2 when performing this alignment with an fm signal generator. Be sure that the dial is mechanically calibrated.

Off-the-Air Alignment

Accurate dial calibration and a frequency-coverage test can also be performed by utilizing off-the-air local fm signals. However, before performing the following procedure, be sure that the dial is mechanically calibrated and AFC circuit is shorted to ground.

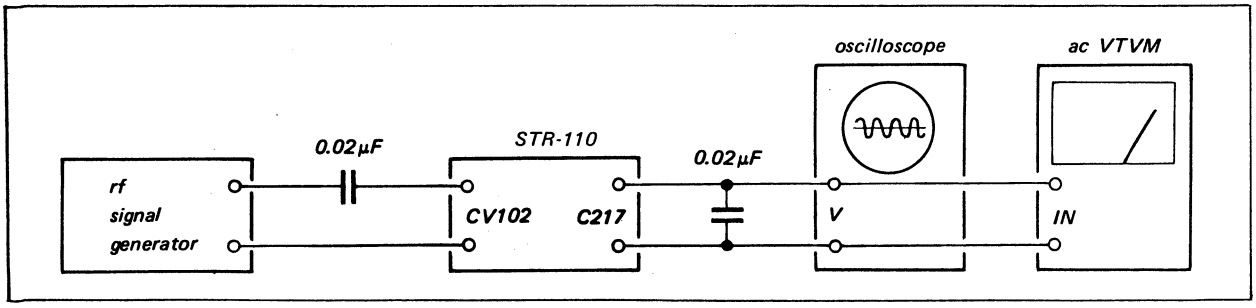


Fig. 3-5. Test setup for fm discriminator alignment by rf signal generator

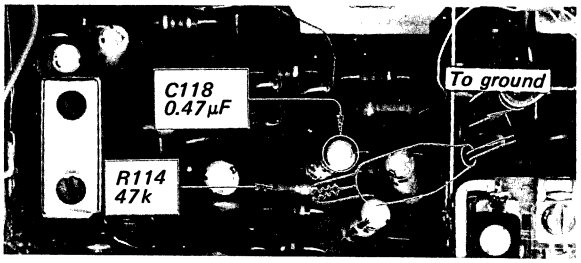


Fig. 3-7. Interruption of AFC circuit

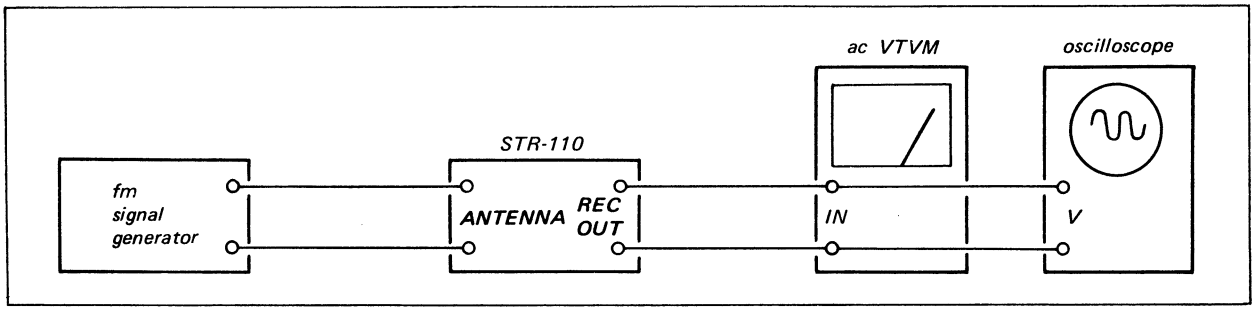


Fig. 3-8. Fm frequency coverage and tracking alignment test setup

TABLE 3-2. FM FREQUENCY COVERAGE AND TRACKING ALIGNMENT

	FM FREQUENCY COVERAGE ALIGNMENT					
Step	**Coupling Between Receiver and SSG**	**SSG Frequency and Output Level**	**Tuner Dial Indication**	**Ac VTVM Connection**	**Adjust**	**Indication**
1.	Direct coupling	86 MHz 400 Hz 100% mod. 10μV (20 dB)	lowest position	REC OUT	OSC coil L103 See Fig. 3-12.	Maximum VTVM reading
2.	Same as above	109.5 MHz 400 Hz 100% mod. 10μV (20 dB)	highest position	Same as above	OSC trimmer CT103 See Fig. 3-12.	Same as above
	FM TRACKING ALIGNMENT					
1.	Direct coupling	86 MHz 400 Hz 100% mod. 10μV (20 dB)	lowest position	REC OUT	RF coil L102 Antenna coil L101 See Fig. 3-12.	Maximum VTVM reading
2.	Same as above	109.5 MHz 400 Hz 100% mod. 10μV (20 dB)	highest position	Same as above	RF trimmer CT102 Antenna trimmer CT101 See Fig. 3-12.	Same as above

3-3. FM STEREO SEPARATION ADJUSTMENT

Test Equipment Required

1. MPX generator
2. Fm signal generator
3. Audio oscillator
4. Ac VTVM
5. Oscilloscope
6. Alignment tools

Preparation

Before starting the stereo-separation adjustment, check and adjust the phase between the 19-kHz pilot signal and the sub-channel signal in the MPX stereo generator as follows:

1. With the equipment connected as shown in Fig. 3-9, set the MPX and audio signal-generator's control as follows:
   MAIN CHANNEL ..... OFF
   SUB CHANNEL ..... ON
   PILOT (19 kHz) ..... OFF
   AUDIO OSCILLATOR
   OUTPUT ..... 400 Hz, 250 mV
2. Adjust the oscilloscope controls to obtain a visible indication. Be sure the scope's horizontal display switch is set for external input.
3. Turn the pilot-signal (19 kHz) phase control to obtain an in-phase and stable lissajous pattern as shown in Fig. 3-10.

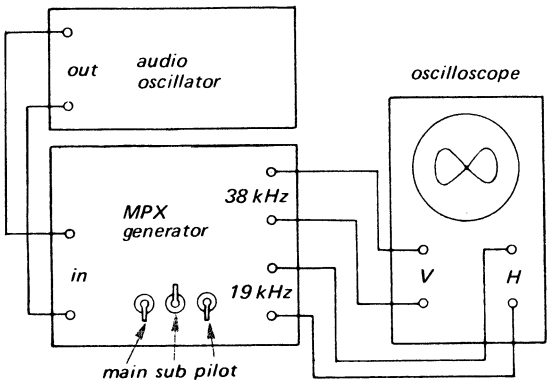


Fig. 3-9. MPX generator preadjustment

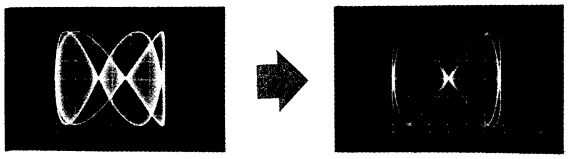


Fig. 3-10. Lissajous pattern

Procedure

1. Connect the equipment as shown in Fig. 3-11. Set the fm signal-generator's control as follows:
   Carrier frequency ..... 98 MHz
   Output level ..... 1,000μV (60 dB)
   Modulation:
   Main channel (400 Hz) .... 33.75 kHz (45%)
   Sub channel (38 kHz) ..... 33.75 kHz (45%)
   Pilot (19 kHz) ..... 7.5 kHz (10%)

   The above mentioned modulation levels can be set as follows:

   (a) With the equipment connected as shown in Fig. 3-11 set the MPX stereo generator controls as follows.
   MAIN CHANNEL ..... OFF
   SUB CHANNEL ..... OFF
   19 kHz (PILOT) ..... ON

   (b) Adjust the 19-kHz signal level to obtain a 7.5-kHz deviation on the FM SSG modulation indicator.

   (c) Reset the MPX stereo-generator's control as follows:
   MAIN CHANNEL ..... ON
   SUB CHANNEL ..... OFF
   19 kHz (PILOT) ..... OFF
   INPUT SELECTOR ..... L-CH

   (d) Adjust the audio-oscillator output (400 Hz) to obtain a 33.75-kHz deviation on the FM S.S.G. modulation indicator.

   (e) Set all controls to ON.
2. Precisely tune the set to the SSG's carrier frequency then turn the top core of switching transformer L301 (see Fig. 3-12) to obtain maximum output at the left channel.
3. Record the output level of the left channel when the MPX generator input selector is set to the left channel.
4. Switch the input selector to the right channel and read the residual signal level in the left channel.
5. The output-level to residual-level ratio represents the separation. Turn the top core of switching transformer L301 (see Fig. 3-12) for minimum residual level. Check the right channel for separation.
6. Readjust switching transformer L301 for minimum difference between left- and right-channel separation.

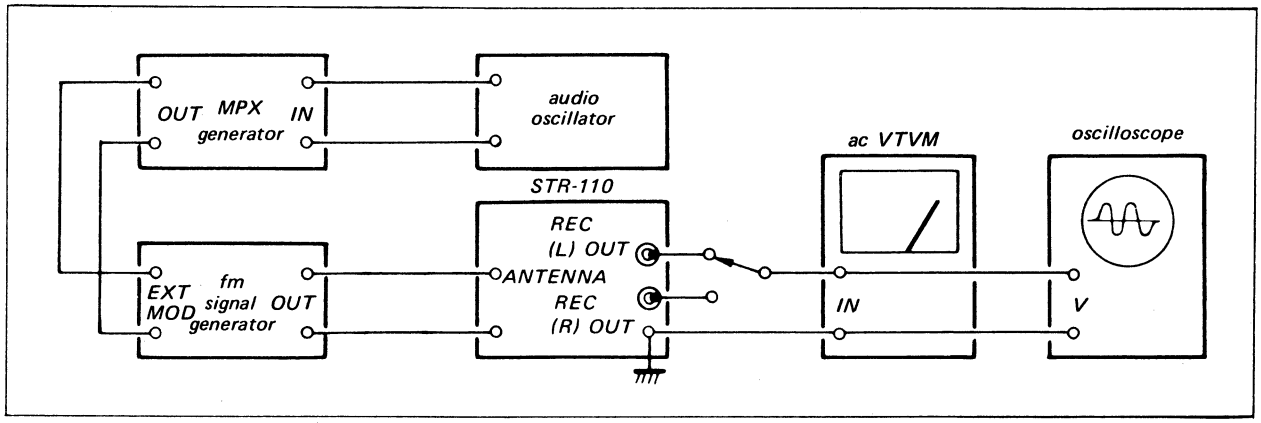


Fig. 3-11. Fm stereo separation adjustment test setup

Adjusting Parts Location

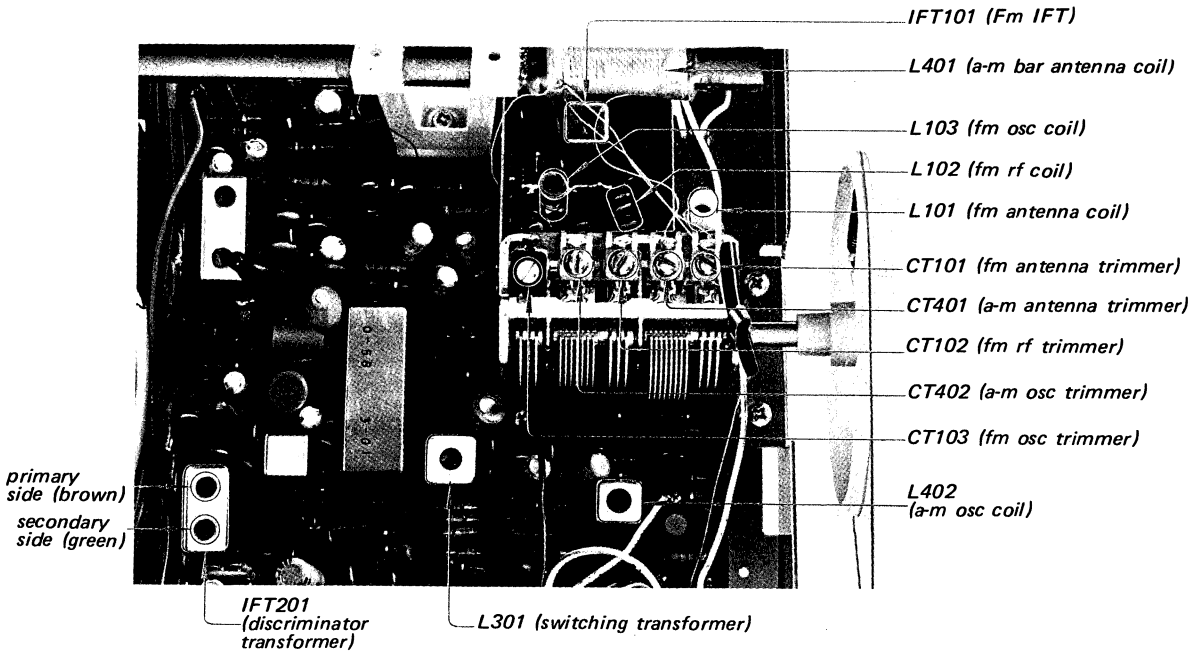


Fig. 3-12. Adjusting parts location

3-4. A-M I-F STRIP ALIGNMENT

Note: The a-m i-f transformers (CFU201 and IFT202) are shipped from the factory with all adjustment set for correct operation. Therefore no adjustment is required in field service.

3-5. A-M FREQUENCY COVERAGE AND TRACKING ALIGNMENT

Preparation

Remove the wooden case as described in Procedure 2-3. Then, set the receiver's Function switch to AM.

Signal Generator Method

Test Equipment Required

1. Signal generator
2. Loop antenna
3. Ac VTVM

Procedure

With the equipment connected as shown in Fig. 3-13, follow the procedures given in Table 3-3 when performing this alignment with an a-m signal generator.

Off-the-Air Signal Method

Accurate dial calibration, and a frequency-coverage and tracking test can also be performed by utilizing off-the-air local a-m signals. However, before performing the following procedure, be sure that the dial is mechanically calibrated.

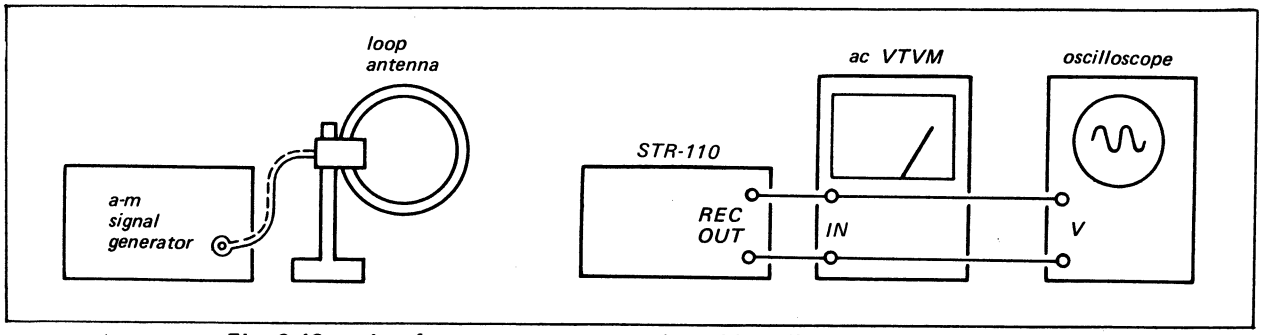


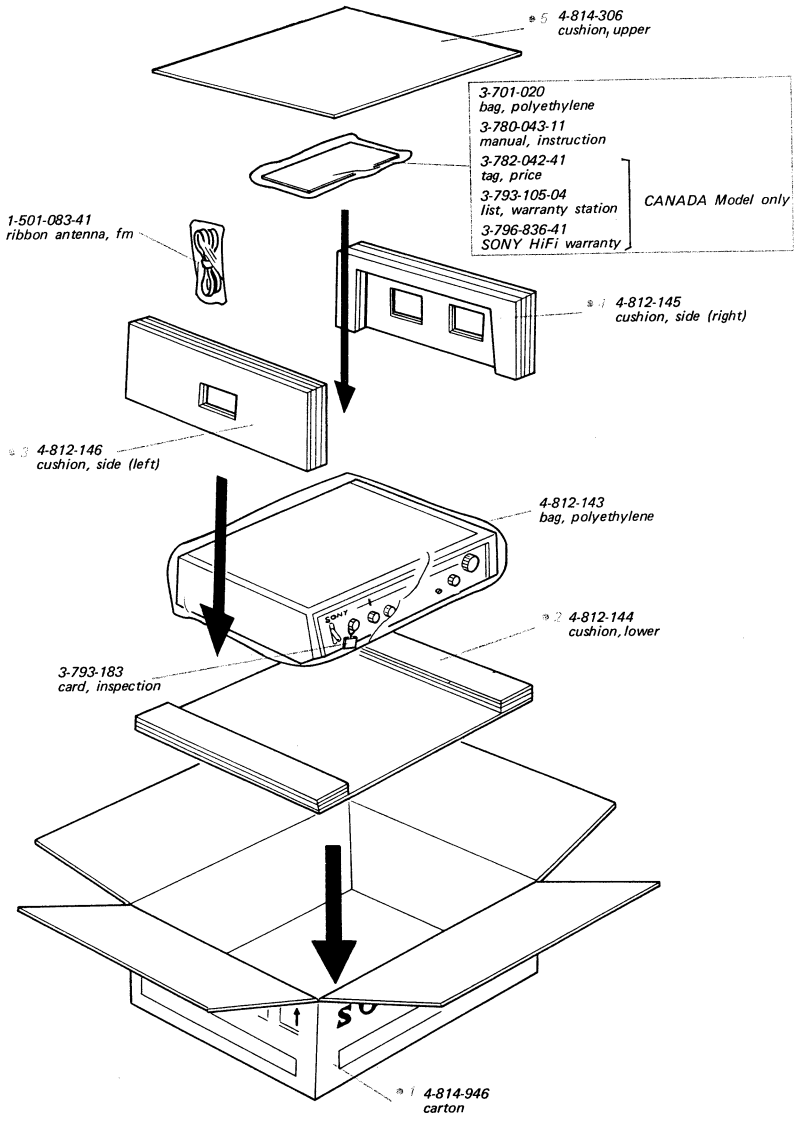
Fig. 3-13. Am frequency coverage and tracking alignment test setup

TABLE 3-3. A-M FREQUENCY COVERAGE AND TRACKING ALIGNMENT

	A-M FREQUENCY COVERAGE ALIGNMENT				
SSG Coupling	**SSG Frequency and Output Level**	**Tuner Dial Indication**	**Ac VTVM Connection**	**Adjust**	**Indication**
Loop antenna	520 kHz 400 Hz 30% mod. 1,000μV (60 dB)	lowest position	REC OUT	OSC coil L402 See Fig. 3-12.	Maximum VTVM reading
Loop antenna	1,680 kHz Same as above	highest position	Same as above	OSC trimmer CT402 See Fig. 3-12.	Same as above
	A-M TRACKING ALIGNMENT				
Loop antenna	620 kHz 400 Hz 30% mod. Output level as low as possible	620 kHz	REC OUT	Position of antenna coil L401 See Fig. 3-12.	Maximum VTVM reading
Loop antenna	1,400 kHz Same as above	1,400 kHz	Same as above	Antenna trimmer CT401 See Fig. 3-12.	Same as above

SECTION 4
REPACKING

The STR-110's original shipping carton and packing materials are the ideal containers for shipping the unit. However to secure the maximum protection, the STR-110 must be repacked in these materials precisely as before. The proper repacking procedures are shown in Fig. 4-1.



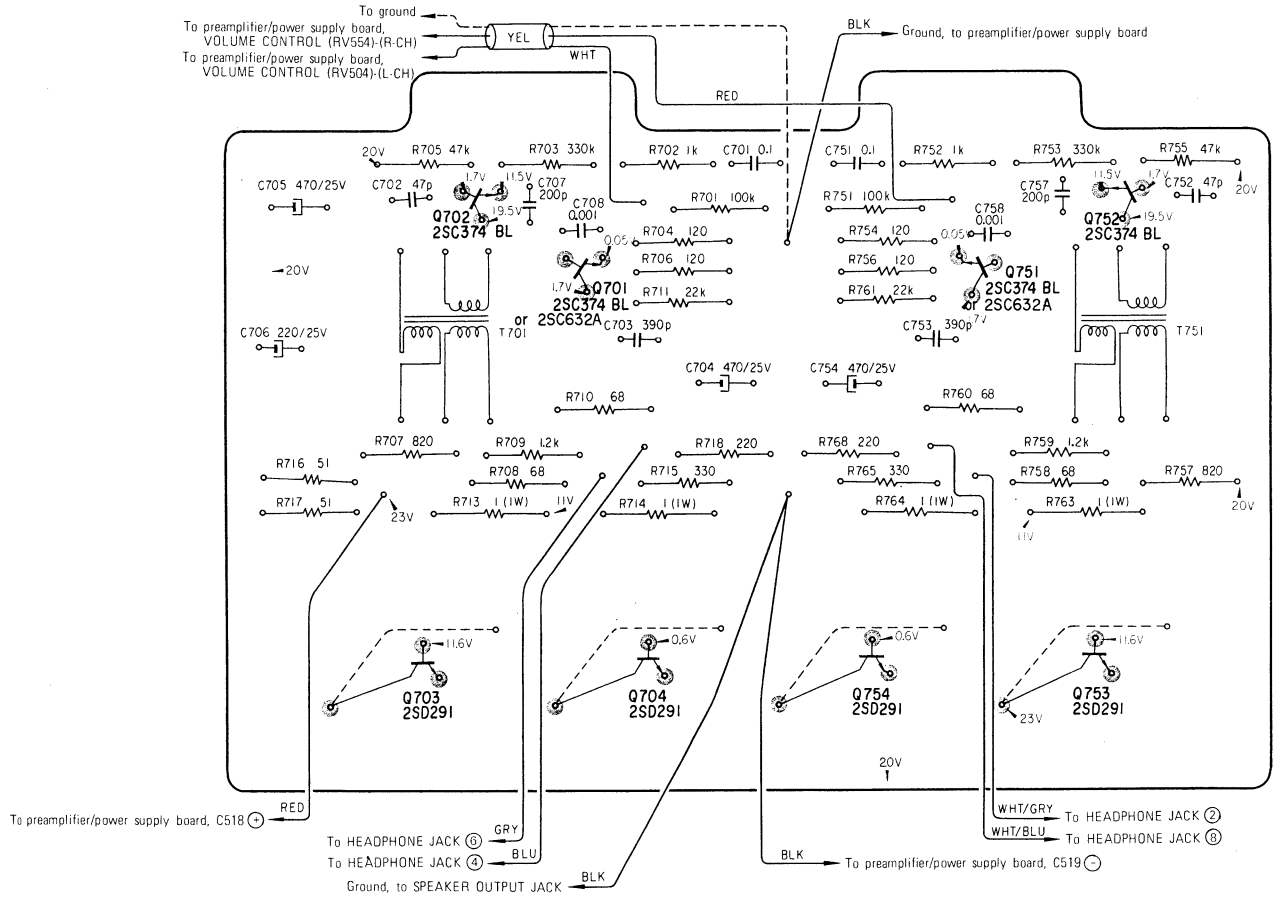
Note: ⊕1~5 carton ass'y (X-48149-04) includes all the parts marked ⊕

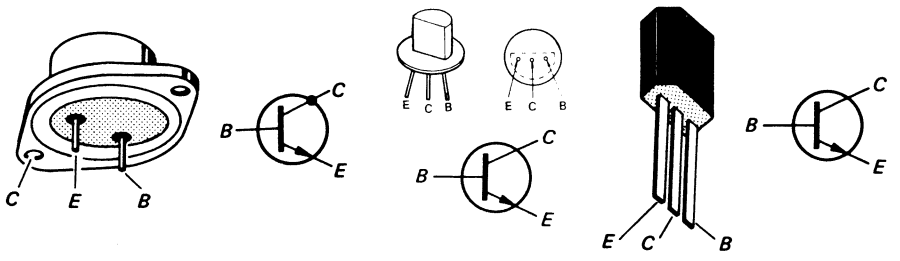
Fig. 4-1. Repacking

SECTION 5
DIAGRAMS

5-1. MOUNTING DIAGRAM – Power Amplifier Board –

– Conductor Side –

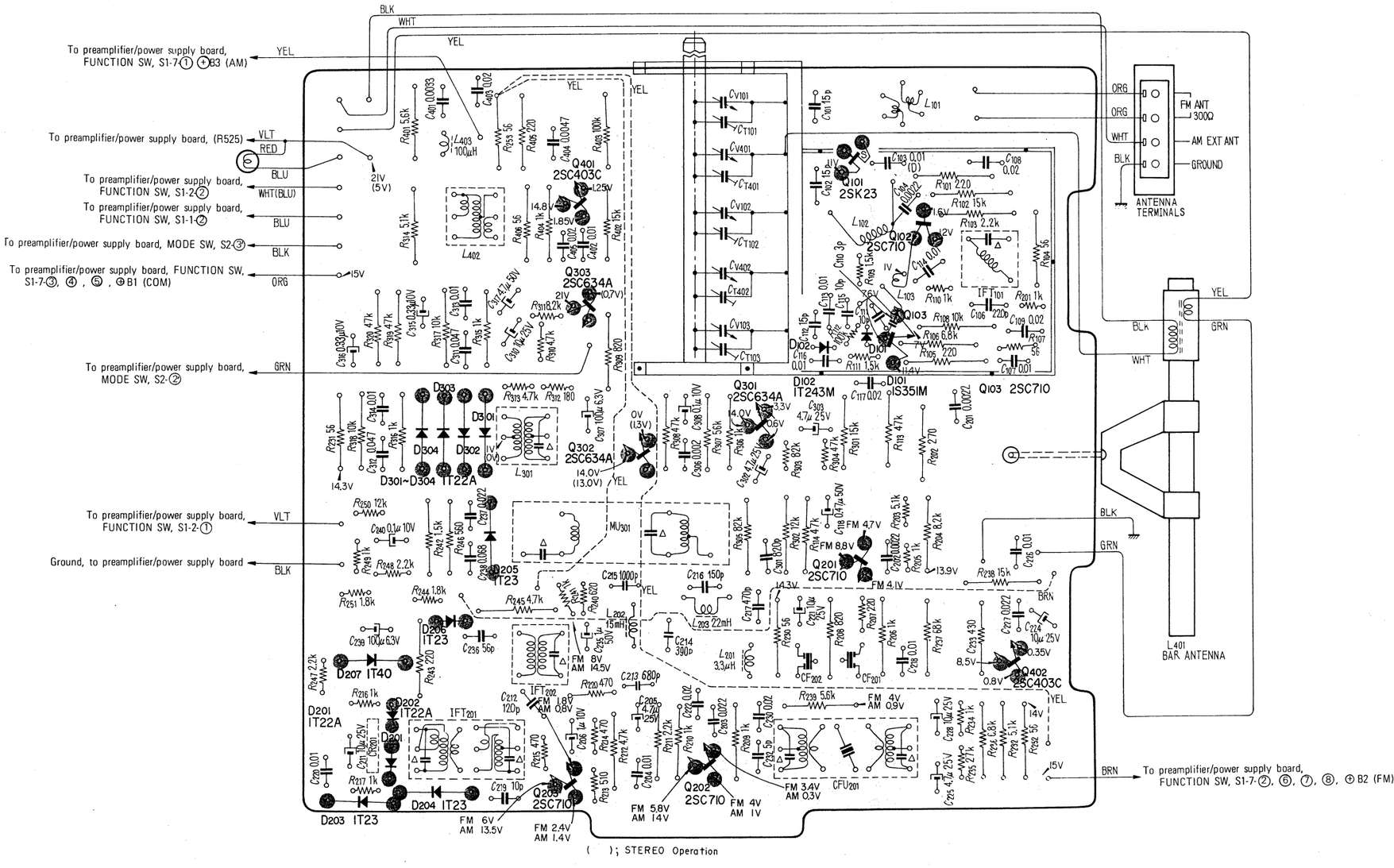


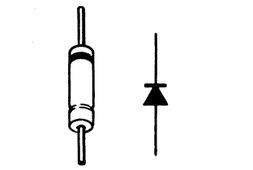


2SD291 *2SC374BL* *2SC632A*

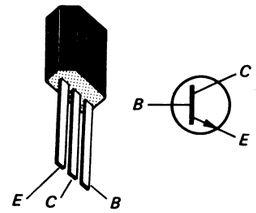
5-2. MOUNTING DIAGRAM — A-m (fm) Front End/I-f Amp/MPX Board —

— Conductor Side —

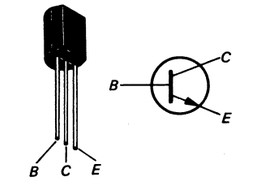




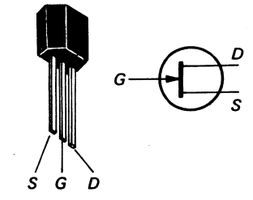
1T23
1T22A
1S351M
1T40



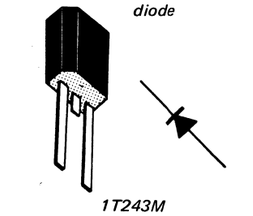
2SC403C
2SC634A



2SC710



2SK23

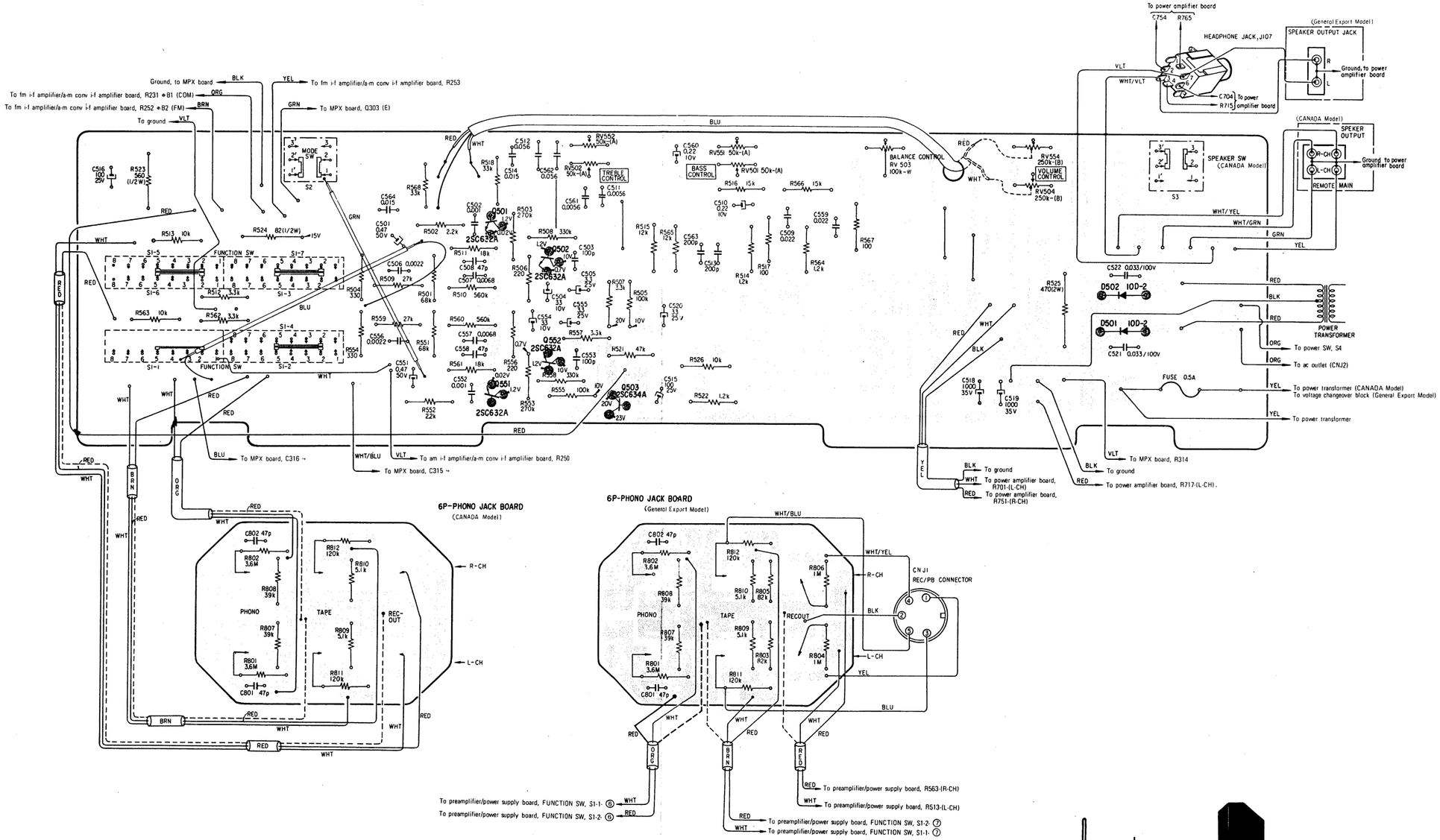


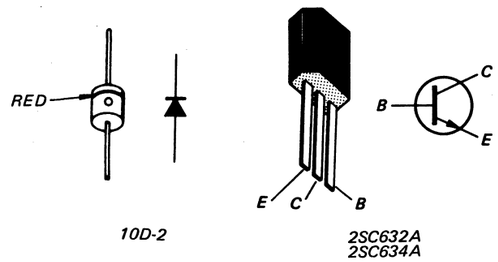
diode

1T243M

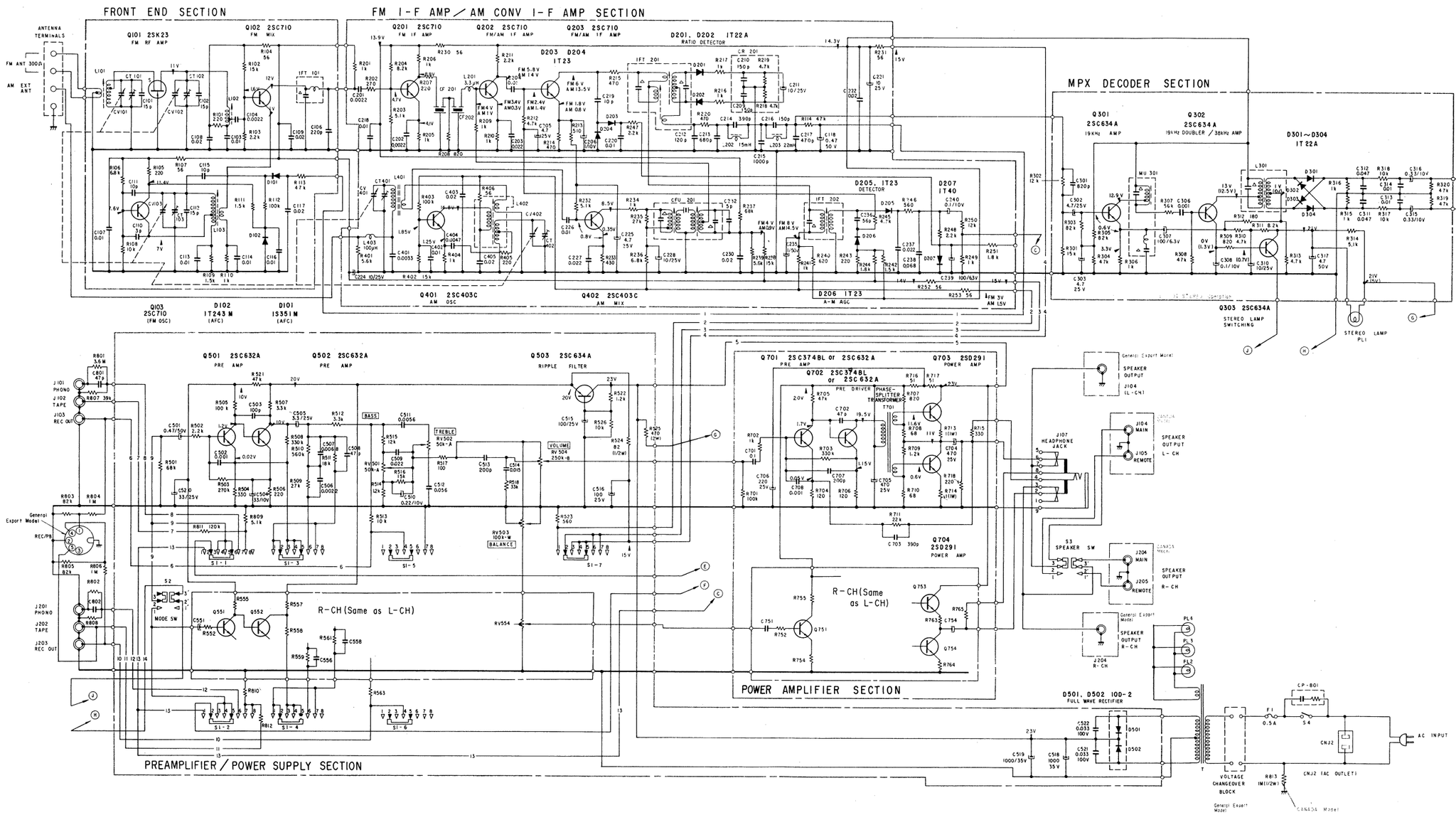
5-3. MOUNTING DIAGRAM — Preamplifier/Power Supply Board —

— Conductor Side —





5-4. SCHEMATIC DIAGRAM



Ref. No.	Description	Position
S1	FUNCTION SW (AM-FM AUTO ST-PHONO-TAPE)	FM AUTO ST
S2	MODE SW (STEREO-MONO)	STEREO
S3	SPEAKER SW (MAIN-REMOTE)	MAIN
S4	POWER SW (ON-OFF)	OFF

Note:

All resistance values are in ohms. k = 1,000, M = 1,000 k
All capacitance values are in μF except as indicated with p, which means μμF.
All voltages represent an average value and should hold within ±20%.
All voltages are dc measured with a VOM which has an input impedance of 20 kohms/volt. No signal in.

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STR-110
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SECTION 6
EXPLODED VIEW

(1) The following chart will help you to decipher the hardware codes given in the exploded view.

– Hardware Nomenclature –

P – Pan Head Screw .....

PS – Pan Head Screw with Spring Washer .....

K – Flat Countersunk Head Screw ...

B – Binding Head Screw .....

RK – Oval Countersunk Head Screw ..

T – Truss Head Screw .....

R – Round Head Screw .....

F – Flat Fillister Head Screw .....

SC – Set Screw .....

E – Retaining Ring (E Washer) .....

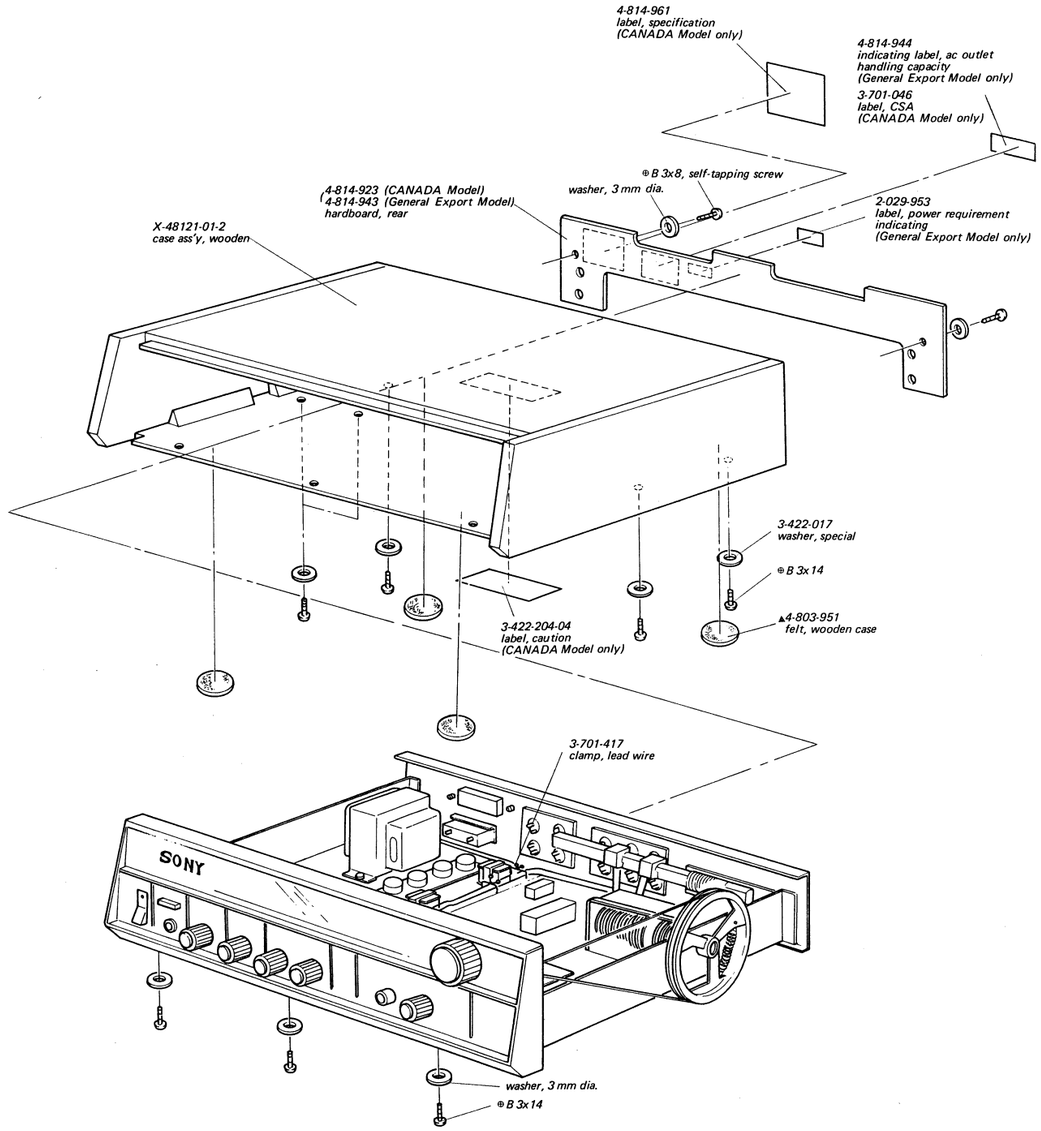
W – Washer
SW – Spring Washer
LW – Lock Washer
N – Nut

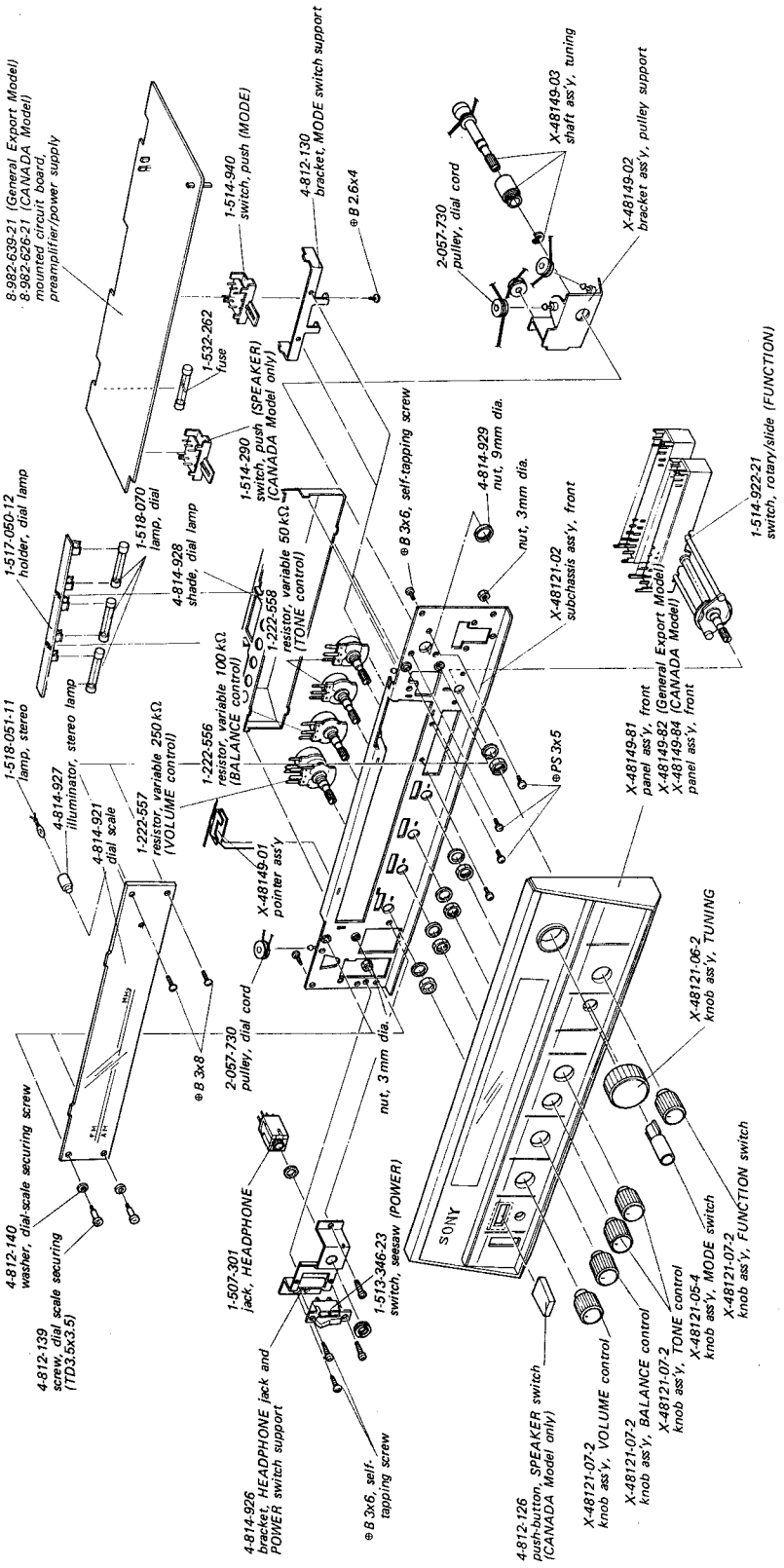
– Example –

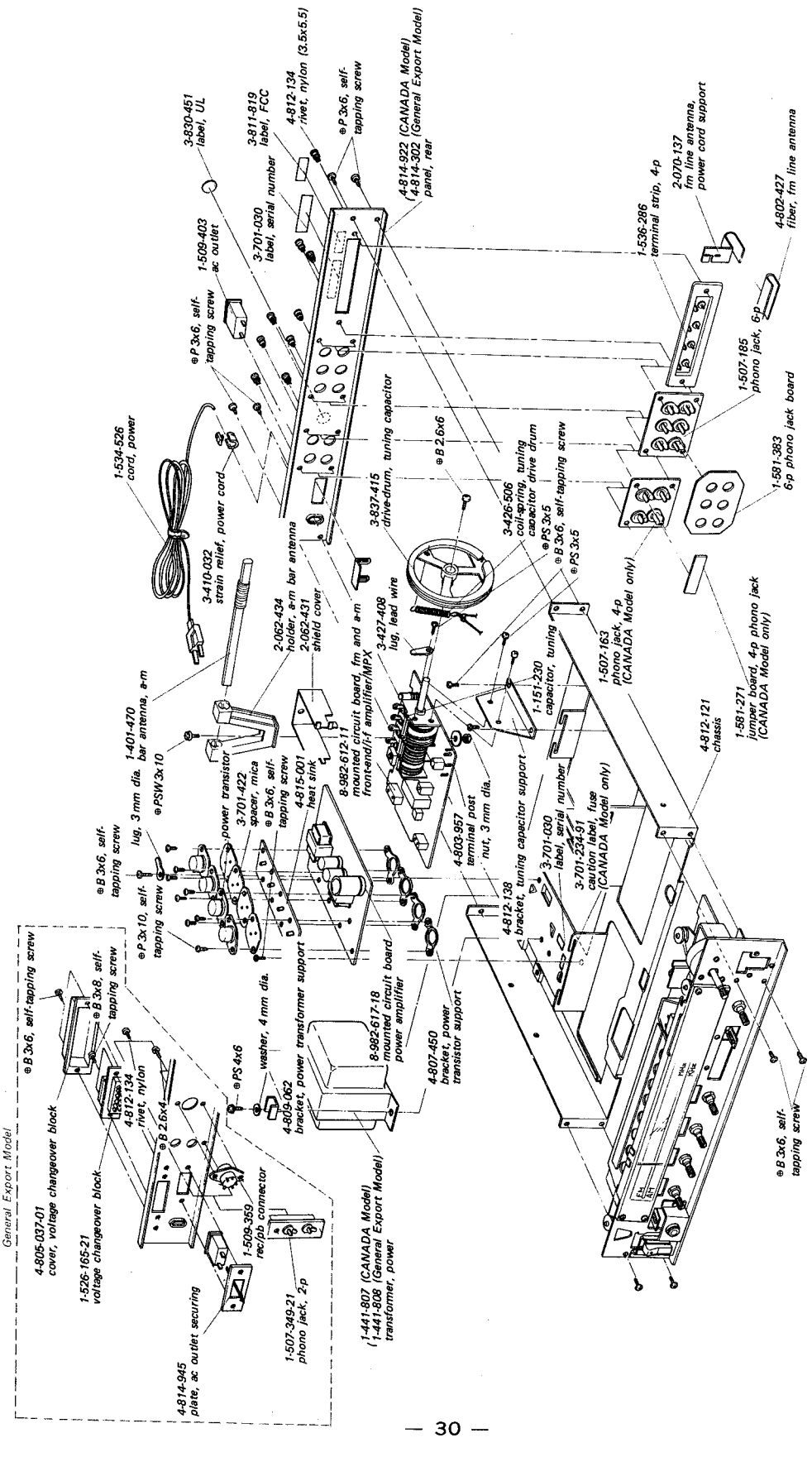
⊕ P 3×10
- Type of Slot
- Length in mm (L)
- Diameter in mm (D)
- Type of Head

(2) To simplify the exploded view, the part numbers of normal screws, nuts, washers, and retaining rings are not expressed but summarized in the table below.

Part No.	*Description*
7-621-770-88	screw, ⊕ B 2.6 x 6
7-621-771-31	screw, ⊕ B 2.6 x 4
7-623-108-12	washer, 3 mm dia. (middle)
7-623-108-22	washer, 3 mm dia. (large)
7-623-110-12	washer, 4 mm dia.
7-623-508-11	lug, 3 mm dia.
7-623-614-01	eyelet, 1.6 x 3
7-682-151-03	screw, ⊕ B 3 x 14
7-682-347-01	screw, ⊕ RK 3 x 8
7-682-548-01	screw, ⊕ B 3 x 8
7-682-549-03	screw, ⊕ B 3 x 10
7-682-646-01	screw, ⊕ PS 3 x 5
7-682-661-01	screw, ⊕ PS 4 x 8
7-682-949-01	screw, ⊕ PSW 3 x 10
7-683-312-00	screw, hex 3 x 25
7-684-013-01	nut, 3 mm dia.
7-685-145-21	screw, self-tapping ⊕ P 3 x 6
7-685-147-21	screw, self-tapping ⊕ P 3 x 10
7-685-545-21	screw, self-tapping ⊕ B 3 x 6
7-685-546-21	screw, self-tapping ⊕ B 3 x 8




8-982-639-21 (General Export Model)
8-982-626-21 (CANADA Model)
mounted circuit board
preamplifier/power supply
1-514-940
switch, push (MODE)
4-812-130
bracket, MODE switch support
⊕B 2.6x4
X-48149-03
shaft ass'y, tuning
2-057-730
pulley, dial cord
X-48149-02
bracket ass'y, pulley support
1-532-262
fuse
1-514-290
switch, push (SPEAKER)
(CANADA Model only)
1-517-050-12
holder, dial lamp
1-518-070
lamp, dial
4-814-928
shade, dial lamp
1-222-558
resistor, variable 50 kΩ
(TONE control)
⊕B 3x6, self-tapping screw
4-814-929
nut, 9mm dia.
nut, 3mm dia.
X-48121-02
subchassis ass'y, front
1-514-922-21
switch, rotary/slide (FUNCTION)
1-518-051-11
lamp, stereo
4-814-927
illuminator, stereo lamp
4-814-921
dial scale
1-222-557
resistor, variable 250 kΩ
(VOLUME control)
1-222-556
resistor, variable 100 kΩ
(BALANCE control)
X-48149-01
pointer ass'y
⊕PS 3x5
X-48149-81
panel ass'y, front
X-48149-82 (General Export Model)
X-48149-84 (CANADA Model)
panel ass'y, front
⊕B 3x8
2-057-730
pulley, dial cord
nut, 3mm dia.
X-48121-06-2
knob ass'y, TUNING
4-812-140
washer, dial-scale securing screw
4-812-139
screw, dial scale securing
(TD3.5X3.5)
1-507-301
jack, HEADPHONE
1-513-346-23
switch, seesaw (POWER)
4-814-926
bracket, HEADPHONE jack and
POWER switch support
⊕B 3x6, self-tapping screw
4-812-126
push-button, SPEAKER switch
(CANADA Model only)
X-48121-07-2
knob ass'y, VOLUME control
X-48121-07-2
knob ass'y, BALANCE control
X-48121-07-2
knob ass'y, TONE control
X-48121-05-4
knob ass'y, MODE switch
X-48121-07-2
knob ass'y, FUNCTION switch
SONY


General Export Model
4-805-037-01 cover, voltage changeover block
1-526-165-21 voltage changeover block
4-814-945 plate, ac outlet securing
1-509-359 rec/pb connector
1-507-349-21 phono jack, 2-p
1-441-807 (CANADA Model)
1-441-808 (General Export Model) transformer, power
8-982-617-18 mounted circuit board power amplifier
4-809-062 bracket, power transformer support
4-807-450 bracket, power transistor support
4-803-957 terminal post
4-815-001 heat sink
3-701-422 spacer, mica
power transistor
1-401-470 bar antenna, a-m
2-062-434 holder, a-m bar antenna
2-062-431 shield cover
8-982-612-11 mounted circuit board, fm and a-m front-end/i-f amplifier/MPX
3-427-408 lug, lead wire
3-837-415 drive-drum, tuning capacitor
3-426-506 coil-spring, tuning capacitor drive drum
1-151-230 capacitor, tuning
4-812-138 bracket, tuning capacitor support
3-701-030 label, serial number
3-701-234-91 caution label, fuse (CANADA Model only)
1-507-163 phono jack, 4-p (CANADA Model only)
4-812-121 chassis
1-581-271 jumper board, 4-p phono jack (CANADA Model only)
1-581-383 6-p phono jack board
1-507-185 phono jack, 6-p
1-536-286 terminal strip, 4-p
2-070-137 fm line antenna, power cord support
4-802-427 fiber, fm line antenna
4-814-922 (CANADA Model)
4-814-302 (General Export Model) panel, rear
3-830-451 label, UL
3-811-819 label, FCC
4-812-134 rivet, nylon (3.5x5.5)
1-509-403 ac outlet
1-534-526 cord, power
3-410-032 strain relief, power cord
washer, 4 mm dia.
nut, 3 mm dia.
lug, 3 mm dia.
B 3x6, self-tapping screw
B 3x8, self-tapping screw
P 3x10, self-tapping screw
PSW 3x10
PS 4x6
B 2.6x4
B 2.6x6
P 3x6, self-tapping screw
PS 3x5
B 3x6, self-tapping screw
PS 3x6

SECTION 7
ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description
		MOUNTED CIRCUIT BOARDS
	8-982-612-11	fm and a-m front-end/i-f amplifier/ MPX circuit board (TCB-012W1)
	8-982-617-18	power amplifier circuit board (PCB-011)
	8-982-639-21	preamplifier/power supply circuit board (General Export Model)
	8-982-626-21	preamplifier/power supply circuit board (CANADA Model)
		SEMICONDUCTORS
D101		diode, 1S351M
D102		diode, 1T243M
D201		diode, 1T22A
D202		diode, 1T22A
D203		diode, 1T23
D204		diode, 1T23
D205		diode, 1T23
D206		diode, 1T23
D207		diode, 1T40
D301		diode, 1T22A
D302		diode, 1T22A
D303		diode, 1T22A
D304		diode, 1T22A
D501 (D502)		diode, 10D-2
Q101		FET, 2SK23
Q102		transistor, 2SC710
Q103		transistor, 2SC710
Q201		transistor, 2SC710
Q202		transistor, 2SC710
Q203		transistor, 2SC710
Q301		transistor, 2SC634A
Q302		transistor, 2SC634A
Q303		transistor, 2SC634A
Q401		transistor, 2SC403C
Q402		transistor, 2SC403C
Q501 (Q551)		transistor, 2SC632A
Q502 (Q552)		transistor, 2SC632A
Q503		transistor, 2SC634A
Q701 (Q751)		transistor, 2SC374BL or 2SC632A
Q702 (Q752)		transistor, 2SC374BL or 2SC632A
Q703 (Q753)		transistor, 2SD291
Q704 (Q754)		transistor, 2SD291
		TRANSFORMERS, COILS AND INDUCTORS
CFU201	1-403-150	CFU, 455 kHz
IFT101	1-403-821	IFT, 10.7 MHz
IFT201	1-403-822	transformer, discriminator
IFT202	1-403-820	IFT, 455 kHz
L101	1-425-708	coil, fm antenna
L102	1-425-547	coil, fm rf
L103	1-405-434	coil, fm osc
L201	1-407-184	inductor, micro 3.3 μH
L202	1-407-585-12	inductor, micro 15 mH
L203	1-407-418-11	shielded inductor 22 mH
L301	1-425-688	transformer, switching
L401	1-401-470	bar antenna, a-m
L402	1-405-486	coil, a-m osc
L403	1-407-169	inductor, micro 100 μH
MU301	1-425-687	MPX unit
T	1-441-807	transformer, power (CANADA Model)
	1-441-808	transformer, power (General Export Model)
T701 (T751)	1-423-164	transformer, phase-splitter

CAPACITORS

All capacitance values are in μF except as indicated with p, which means μμF.

C101	1-102-951	15p	±5%	50V	ceramic
C102	1-102-951	15p	±5%	50V	ceramic
C103	1-101-118	0.01	$\pm^{100}_{0}$%	50V	ceramic
C104	1-101-919	0.0022	$\pm^{80}_{20}$%	25V	ceramic
C105		———			
C106	1-102-978	220p	±5%	50V	ceramic
C107	1-101-923	0.01	$\pm^{80}_{20}$%	25V	ceramic
C108	1-101-924	0.02	$\pm^{80}_{20}$%	25V	ceramic
C109	1-101-924	0.02	$\pm^{80}_{20}$%	25V	ceramic
C110	1-102-862	3p	±0.25p	50V	ceramic
C111	1-102-947	10p	±5%	50V	ceramic
C112	1-101-971	15p	±5%	50V	ceramic
C113	1-101-118	0.01	$\pm^{100}_{0}$%	50V	ceramic
C114	1-101-923	0.01	$\pm^{80}_{20}$%	25V	ceramic
C115	1-102-947	10p	±5%	50V	ceramic
C116	1-101-923	0.01	$\pm^{80}_{20}$%	25V	ceramic
C117	1-101-924	0.02	$\pm^{80}_{20}$%	25V	ceramic
C118	1-121-726	0.47	$\pm^{150}_{10}$%	50V	electrolytic
C201	1-101-919	0.0022	$\pm^{80}_{20}$%	25V	ceramic
C202	1-105-665-12	0.022	±10%	50V	mylar
C203	1-105-677-12	0.022	±10%	50V	mylar
C204	1-101-923	0.01	$\pm^{80}_{20}$%	25V	ceramic
C205	1-121-395	4.7	$\pm^{150}_{10}$%	25V	electrolytic
C206	1-127-023	1	±20%	10V	solid, aluminum

Ref. No.	Part No.	Description			
C207		———			
C208		———			
C209		———			
C210		———			
C211	1-121-398	10	$\pm^{100}_{10}$%	25V	electrolytic
C212	1-101-340	120p	±10%	50V	ceramic
C213	1-102-116	680p	±10%	50V	ceramic
C214	1-102-822	390p	±5%	50V	ceramic
C215	1-102-074	1,000p	±10%	50V	ceramic
C216	1-101-361	150p	±5%	50V	ceramic
C217	1-102-824	470p	±5%	50V	ceramic
C218	1-101-923	0.01	$\pm^{80}_{20}$%	25V	ceramic
C219	1-102-947	10p	±5%	50V	ceramic
C220	1-101-923	0.01	$\pm^{80}_{20}$%	25V	ceramic
C221	1-121-398	10	$\pm^{100}_{10}$%	25V	electrolytic
C222	1-101-924	0.02	$\pm^{80}_{20}$%	25V	ceramic
C223		———			
C224	1-121-398	10	$\pm^{100}_{10}$%	25V	electrolytic
C225	1-121-395	4.7	$\pm^{150}_{10}$%	25V	electrolytic
C226	1-101-923	0.01	$\pm^{80}_{20}$%	25V	ceramic
C227	1-105-677-12	0.022	±10%	50V	mylar
C228	1-121-398	10	$\pm^{100}_{10}$%	25V	electrolytic
C229		———			
C230	1-101-924	0.02	$\pm^{80}_{20}$%	25V	ceramic
C231		———			
C232	1-102-942	5p	±5%	50V	ceramic
C233		———			
C234		———			
C235	1-121-391	1	$\pm^{150}_{10}$%	50V	electrolytic
C236	1-101-884	56p	±5%	50V	ceramic
C237	1-105-677-12	0.022	±10%	50V	mylar
C238	1-105-683-12	0.068	±10%	50V	mylar
C239	1-121-413	100	$\pm^{100}_{10}$%	6.3V	electrolytic
C240	1-127-019	0.1	±20%	10V	solid, aluminum
C301	1-102-117	820p	±10%	50V	ceramic
C302	1-121-395	4.7	$\pm^{150}_{10}$%	25V	electrolytic
C303	1-121-395	4.7	$\pm^{150}_{10}$%	25V	electrolytic
C304		———			
C305		———			
C306	1-105-661-12	0.001	±10%	50V	mylar
C307	1-121-413	100	$\pm^{100}_{10}$%	6.3V	electrolytic
C308	1-127-019	0.1	±20%	10V	solid, aluminum
C309		———			
C310	1-121-398	10	$\pm^{100}_{10}$%	25V	electrolytic
C311	1-105-681-12	0.047	±10%	50V	mylar
C312	1-105-681-12	0.047	±10%	50V	mylar
C313	1-105-673-12	0.01	±10%	50V	mylar
C314	1-105-673-12	0.01	±10%	50V	mylar
C315	1-127-021	0.33	±20%	10V	solid, aluminum
C316	1-127-021	0.33	±20%	10V	solid, aluminum
C317	1-121-396	4.7	$\pm^{150}_{10}$%	50V	electrolytic
C401	1-105-667-12	0.0033	±10%	50V	mylar
C402	1-101-923	0.01	$\pm^{80}_{20}$%	25V	ceramic
C403	1-101-924	0.02	$\pm^{80}_{20}$%	25V	ceramic
C404	1-105-669-12	0.0047	±10%	50V	mylar
C405	1-101-924	0.02	$\pm^{80}_{20}$%	25V	ceramic
C501 (C551)	1-121-726	0.47	$\pm^{150}_{10}$%	50V	electrolytic
C502 (C552)	1-105-661-12	0.001	±10%	50V	mylar
C503 (C553)	1-102-975	100p	±10%	50V	ceramic
C504 (C554)	1-121-402	33	$\pm^{100}_{10}$%	10V	electrolytic
C505 (C555)	1-121-392	3.3	$\pm^{150}_{10}$%	25V	electrolytic
C506 (C556)	1-105-665-12	0.0022	±10%	50V	mylar
C507 (C557)	1-105-671-12	0.0068	±10%	50V	mylar
C508 (C558)	1-101-880	47p	±5%	50V	ceramic
C509 (C559)	1-105-677-12	0.022	±10%	50V	mylar
C510 (C560)	1-127-020	0.22	±20%	10V	solid, aluminum
C511 (C561)	1-105-670-12	0.0056	±10%	50V	mylar
C512 (C562)	1-105-682-12	0.056	±10%	50V	mylar
C513 (C563)	1-107-138	200p	±10%	50V	silvered mica
C514 (C564)	1-105-675-12	0.015	±10%	50V	mylar
C515	1-121-416	100	$\pm^{100}_{10}$%	25V	electrolytic
C516	1-121-416	100	$\pm^{100}_{10}$%	25V	electrolytic
C517		———			
C518	1-121-388	1,000	$\pm^{100}_{10}$%	35V	electrolytic
C519	1-121-388	1,000	$\pm^{100}_{10}$%	35V	electrolytic
C520	1-121-404	33	$\pm^{100}_{10}$%	25V	electrolytic
C521	1-105-719-12	0.033	±10%	100V	mylar
C522	1-105-719-12	0.033	±10%	100V	mylar
C701 (C751)	1-105-685-12	0.1	±10%	50V	mylar
C702 (C752)	1-101-881	47p	±10%	50V	ceramic
C703 (C753)	1-102-113	390p	±10%	50V	ceramic
C704 (C754)	1-121-733	470	$\pm^{100}_{10}$%	25V	electrolytic
C705	1-121-733	470	$\pm^{100}_{10}$%	25V	electrolytic
C706	1-121-422	220	$\pm^{100}_{10}$%	25V	electrolytic
C707 (C757)	1-102-977	200p	±5%	50V	ceramic
C708 (C758)	1-105-661-12	0.001	±10%	50V	mylar
C801	1-101-881	47p	±10%	50V	ceramic
C802	1-101-881	47p	±10%	50V	ceramic
CV101, CV102, CV103, CV401, CV402	1-151-230	capacitor, tuning			

Ref. No.	Part No.	Description
	RESISTORS	
	All resistance values are in ohms, ±10%, ¼W and composition type unless otherwise indicated.	
R101	1-202-367	220
R102	1-202-411	15 k
R103	1-202-391	2.2 k
R104	1-202-343	56
R105	1-202-367	220
R106	1-202-403	6.8 k
R107	1-202-343	56
R108	1-202-407	10 k
R109	1-202-387	1.5 k
R110	1-202-383	1 k
R111	1-202-387	1.5 k
R112	1-202-431	100 k
R113	1-202-423	47 k
R114	1-202-423	47 k
R201	1-202-383	1 k
R202	1-202-369	270
R203	1-202-400	5.1 k
R204	1-202-405	8.2 k
R205	1-202-383	1 k
R206	1-202-383	1 k
R207	1-202-367	220
R208	1-202-381	820
R209	1-202-383	1 k
R210	1-202-383	1 k
R211	1-202-391	2.2 k
R212	1-202-399	4.7 k
R213	1-202-376	510
R214	1-202-375	470
R215	1-202-375	470
R216	1-202-383	1 k
R217	1-202-383	1 k
R218		————
R219		————
R220	1-202-375	470
R230	1-202-343	56
R231	1-202-343	56
R232	1-202-400	5.1 k
R233	1-202-374	430
R234	1-202-383	1 k
R235	1-202-417	27 k
R236	1-202-403	6.8 k
R237	1-202-427	68 k
R238	1-202-411	15 k
R239	1-202-401	5.6 k
R240	1-202-378	620
R241	1-202-383	1 k
R242	1-202-387	1.5 k
R243	1-202-367	220

Ref. No.	Part No.	Description
R244	1-202-389	1.8 k
R245	1-202-399	4.7 k
R246	1-202-377	560
R247	1-202-391	2.2 k
R248	1-202-391	2.2 k
R249	1-202-383	1 k
R250	1-202-409	12 k
R251	1-202-389	1.8 k
R252	1-202-343	56
R253	1-202-343	56
R301	1-202-411	15 k
R302	1-202-409	12 k
R303	1-202-429	82 k
R304	1-202-423	47 k
R305	1-202-429	82 k
R306	1-202-383	1 k
R307	1-202-425	56 k
R308	1-202-423	47 k
R309	1-202-381	820
R310	1-202-399	4.7 k
R311	1-202-405	8.2 k
R312	1-202-365	180
R313	1-202-399	4.7 k
R314	1-202-400	5.1 k
R315	1-202-383	1 k
R316	1-202-383	1 k
R317	1-202-407	10 k
R318	1-202-407	10 k
R319	1-202-423	47 k
R320	1-202-423	47 k
R401	1-202-401	5.6 k
R402	1-202-411	15 k
R403	1-202-431	100 k
R404	1-202-383	1 k
R405	1-202-367	220
R406	1-202-343	56
R501 (R551)	1-244-717	68 k ±5% ¼W carbon
R502 (R552)	1-244-681	2.2 k ±5% ¼W carbon
R503 (R553)	1-244-731-09	270 k ±5% ¼W carbon (noiseless)
R504 (R554)	1-244-661	330 ±5% ¼W carbon
R505 (R555)	1-244-721	100 k ±5% ¼W carbon
R506 (R556)	1-244-657	220 ±5% ¼W carbon
R507 (R557)	1-244-685	3.3 k ±5% ¼W carbon
R508 (R558)	1-244-733	330 k ±5% ¼W carbon
R509 (R559)	1-244-707	27 k ±5% ¼W carbon
R510 (R560)	1-244-739	560 k ±5% ¼W carbon
R511 (R561)	1-244-703	18 k ±5% ¼W carbon
R512 (R562)	1-244-685	3.3 k ±5% ¼W carbon
R513 (R563)	1-244-697	10 k ±5% ¼W carbon
R514 (R564)	1-244-675	1.2 k ±5% ¼W carbon

Ref. No.	Part No.	Description			
R515 (R565)	1-244-699	12 k	±5%	¼W	carbon
R516 (R566)	1-244-701	15 k	±5%	¼W	carbon
R517 (R567)	1-244-649	100	±5%	¼W	carbon
R518 (R568)	1-244-709	33 k	±5%	¼W	carbon
R519 (R569)		———			
R520		———			
R521	1-244-713	47 k	±5%	¼W	carbon
R522	1-244-675	1.2 k	±5%	¼W	carbon
R523	1-202-567	560		½W	
R524	1-202-547	82		½W	
R525	1-206-656	470	±10%	2W	metal-oxide
R526	1-244-697	10 k	±5%	¼W	carbon
R701 (R751)	1-202-431	100 k			
R702 (R752)	1-202-383	1 k			
R703 (R753)	1-202-443	330 k			
R704 (R754)	1-202-361	120			
R705 (R755)	1-202-423	47 k			
R706 (R756)	1-202-361	120			
R707 (R757)	1-202-381	820			
R708 (R758)	1-202-355	68			
R709 (R759)	1-202-385	1.2 k			
R710 (R760)	1-202-355	68			
R711 (R761)	1-202-415	22 k			
R712 (R762)		———			
R713 (R763)	1-212-385	1	±10%	1W	metal-oxide
R714 (R764)	1-212-385	1	±10%	1W	metal-oxide
R715 (R765)	1-202-371	330			
R716	1-202-342	51			
R717	1-202-342	51			
R718 (R768)	1-202-367	220			
R801	1-202-468	3.6 M			
R802	1-202-468	3.6 M			
R803	1-244-719	82 k	±5%	¼W	carbon (General Export Model only)
R804	1-244-745	1 M	±5%	¼W	carbon (General Export Model only)
R805	1-244-719	82 k	±5%	¼W	carbon (General Export Model only)
R806	1-244-745	1 M	±5%	¼W	carbon (General Export Model only)
R807	1-244-711	39 k	±5%	¼W	carbon
R808	1-244-711	39 k	±5%	¼W	carbon
R809	1-244-690	5.1 k	±5%	¼W	carbon
R810	1-244-690	5.1 k	±5%	¼W	carbon
R811	1-244-723	120 k	±5%	¼W	carbon
R812	1-244-723	120 k	±5%	¼W	carbon
R813	1-202-645	1 M		½W	(CANADA Model only)

Ref. No.	Part No.	Description
RV501 (RV551)	1-222-558	50 k (A), variable (BASS control)
RV502 (RV552)	1-222-558	50 k (A), variable (TREBLE control)
RV503	1-222-556	100 k (W), variable (BALANCE control)
RV504 (RV554)	1-222-557	250 k (B), variable (VOLUME control)

SWITCHES

S1	1-514-922-21	switch, rotary/slide (FUNCTION)
S2	1-514-940	switch, push (MODE)
S3	1-514-290	switch, push (SPEAKER) (CANADA Model only)
S4	1-513-346-21	switch, lever (POWER)

FILTERS

	1-403-562-11	fm i-f, ceramic 10.70 MHz (red)
CF201	1-403-562-31	fm i-f, ceramic 10.74 MHz (white)
	1-403-562-51	fm i-f, ceramic 10.78 MHz (yellow)

MISCELLANEOUS

CP801	1-231-057-12	encapsulated component, 120 Ω + 0.033 μF
CR201	1-231-175	encapsulated component, 4.7 kΩ + 150 pF
	1-507-163	phono jack, 4-P (CANADA Model only)
	1-507-185	phono jack, 6-P
	1-581-383	phono jack board, 6-P
J107	1-507-301	jack, HEADPHONE
	1-507-349-21	phono jack, 2-P (General Export Model only)
CNJ1	1-509-359	REC/PB connector (General Export Model only)
CNJ2	1-509-403	AC outlet
	1-517-050-12	socket, dial lamps
PL1	1-518-051-11	lamp, stereo 4.5 V/40 mA
PL2, 3, 4	1-518-070	lamp, dial 8 V/0.3 A
	1-526-165	voltage changeover block (General Export Model only)
F1	1-532-262	fuse 0.5 A
	1-534-526	cord, power
	1-536-286	terminal strip, 4-P (ANTENNA)
	1-581-271	jumper board, 4-P phono jack

SONY CORPORATION

SONY®

STR-110

CANADA and General Export Model

SERVICE MANUAL SUPPLEMENT

No. 1
Aug. 1972

Subject: Minor changes on Model STR-110

1. INTRODUCTION

This supplement updates the service manual to include production changes on fm (a-m) front end/i-f amp/MPX board.

2. DESCRIPTION OF THE MODIFICATIONS

2-1. Applicable serial numbers

	Serial Number
Canada Model	71,001 and later
General Export Model	51,501 and later

2-2. Part changed (Exploded View and Electrical Parts List)

Former	*Changed to (New)*
fm (a-m) front end/i-f amp/MPX board 8-982-612-11 (TCB-012W1)	fm (a-m) front end/i-f amp/MPX board 8-982-645-11 (TCB-012BW1)

Note: TCB-012BW1 mounting diagram ..... page 4
TCB-012BW1 schematic diagram ..... page 5
TCB-012BW1 parts list ..... page 7
exploded view ..... page 3

2-3. Parts added (Exploded View)

Description	*Parts Number*
holder (A), a-m ferrite bar antenna	4-818-401-00
holder (B), a-m ferrite bar	4-818-402-00
plate, a-m ferrite bar antenna holder mounting	4-818-404-00
shield plate	4-818-214-00
rivet, nylon	4-818-403-00
⊕ B 3x6, self-tapping screw	7-685-545-21

2-4. Parts deleted (Exploded View)

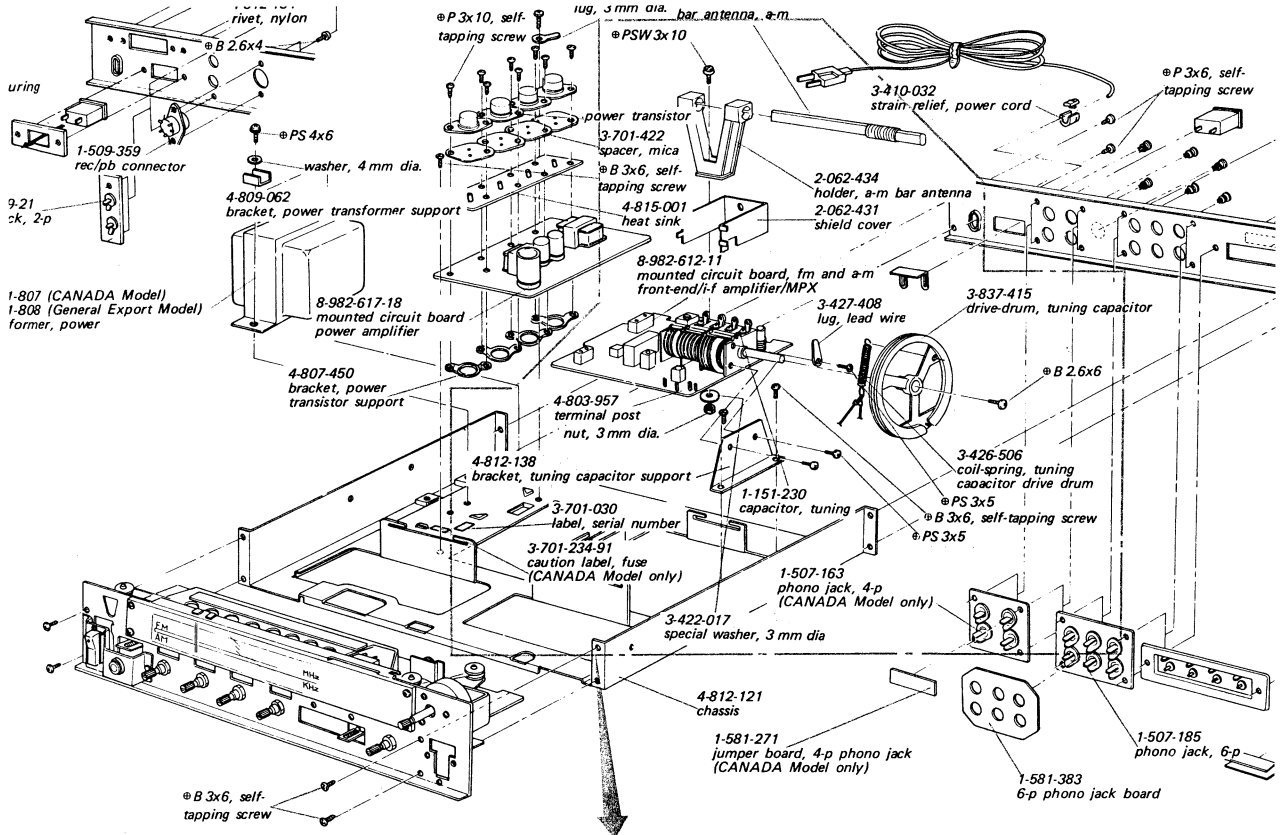
Description	*Parts Number*
bracket, tuning capacitor support	4-812-138
holder, a-m bar antenna	2-062-434
screw, ⊕ PSW 3x10	7-682-949-01
⊕ B 3x6, self-tapping screw	7-685-545-21
⊕ PS 3x5	7-682-646-01
special washer, 3 mm dia	3-427-017
nut, 3 mm dia	7-684-013-01

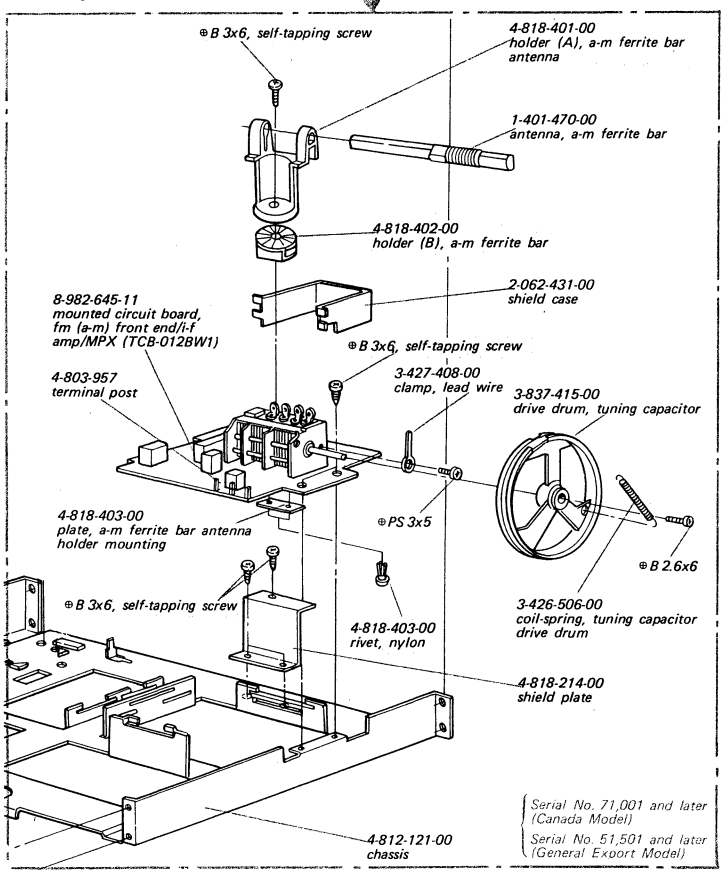
SERVICING NOTE

CAUTION

Fm frequency coverage and tracking alignment Test Frequencies for new fm (a-m) front end/i-f amp/MPX board changed as follows:

Dial Indication	Former Test Frequency	New Test Frequency
Lowest position	86 MHz	87.2 MHz
Highest position	109.5 MHz	108.4 MHz

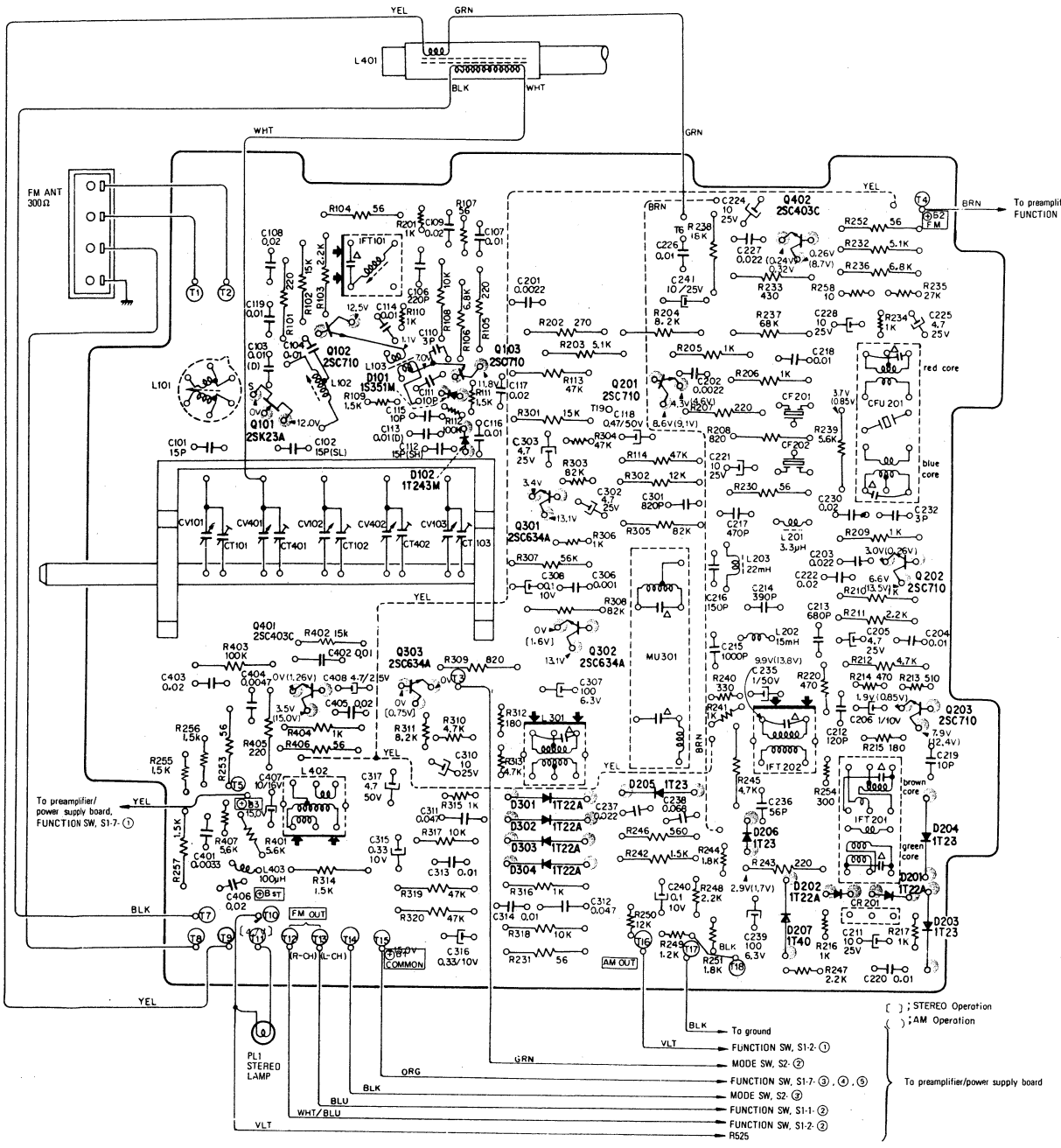

rivet, nylon
⊕B 2.6x4
⊕PS 4x6
1-509-359
rec/pb connector
washer, 4 mm dia.
4-809-062
bracket, power transformer support
8-982-617-18
mounted circuit board
power amplifier
4-807-450
bracket, power
transistor support
⊕P 3x10, self-
tapping screw
⊕PSW 3x10
power transistor
3-701-422
spacer, mica
⊕B 3x6, self-
tapping screw
4-815-001
heat sink
8-982-612-11
mounted circuit board, fm and a-m
front-end/i-f amplifier/MPX
4-803-957
terminal post
nut, 3 mm dia.
4-812-138
bracket, tuning capacitor support
3-701-030
label, serial number
3-701-234-91
caution label, fuse
(CANADA Model only)
3-422-017
special washer, 3 mm dia
4-812-121
chassis
⊕B 3x6, self-
tapping screw
3-410-032
strain relief, power cord
2-062-434
holder, a-m bar antenna
2-062-431
shield cover
3-427-408
lug, lead wire
3-837-415
drive-drum, tuning capacitor
⊕B 2.6x6
3-426-506
coil-spring, tuning
capacitor drive drum
1-151-230
capacitor, tuning
⊕PS 3x5
⊕B 3x6, self-tapping screw
⊕PS 3x5
1-507-163
phono jack, 4-p
(CANADA Model only)
1-581-271
jumper board, 4-p phono jack
(CANADA Model only)
1-581-383
6-p phono jack board
1-507-185
phono jack, 6-p
⊕P 3x6, self-
tapping screw


⊕B 3x6, self-tapping screw
4-818-401-00
holder (A), a-m ferrite bar
antenna
1-401-470-00
antenna, a-m ferrite bar
4-818-402-00
holder (B), a-m ferrite bar
2-062-431-00
shield case
8-982-645-11
mounted circuit board,
fm (a-m) front end/i-f
amp/MPX (TCB-012BW1)
⊕B 3x6, self-tapping screw
4-803-957
terminal post
3-427-408-00
clamp, lead wire
3-837-415-00
drive drum, tuning capacitor
4-818-403-00
plate, a-m ferrite bar antenna
holder mounting
⊕PS 3x5
⊕B 2.6x6
⊕B 3x6, self-tapping screw
4-818-403-00
rivet, nylon
3-426-506-00
coil-spring, tuning capacitor
drive drum
4-818-214-00
shield plate
4-812-121-00
chassis
Serial No. 71,001 and later
(Canada Model)
Serial No. 51,501 and later
(General Export Model)

4. MOUNTING DIAGRAM

– Fm (A-m) Front End/I-f Amp/MPX Board (TCB-012BW1) (Serial No. 71,001 and later (Canada Model) / Serial No. 51,501 and later (General Export Model)) –

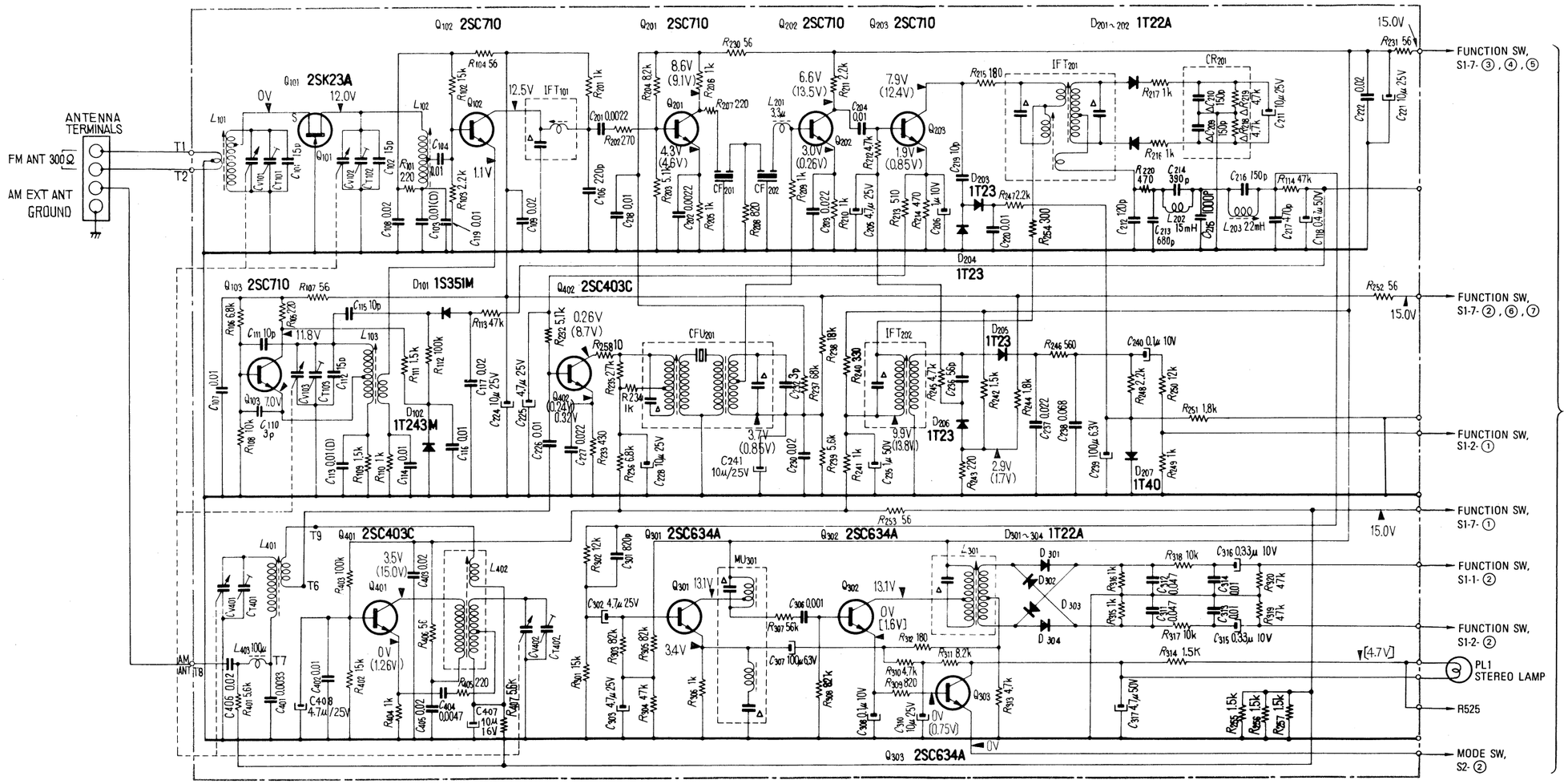
– Conductor Side –



Note: ⬚ Shows the location of stencilled part number. Refer to this mark when replacing the part.

5. SCHEMATIC DIAGRAM

– Fm (A-m) Front End/I-f Amp/MPX Section (Serial No. 71,001 and later (Canada Model) / Serial No. 51,501 and later (General Export Model)) –



Note:

All resistance values are in ohms. k = 1,000, M = 1,000 k.
All capacitance values are in μF except as indicated with p, which means μμF.
All voltages represent an average value and should hold within ±20%.
All voltages are dc measured with a VOM which has an input impedance of 20 k ohms/volt. No signal in.
[ ]; STEREO Operation
( ); A-M Operation

6. ELECTRICAL PARTS LIST (TCB-012BW1) (Serial No. 71,001 and later (Canada Model) / Serial No. 51,501 and later (General Export Model))

Ref. No.	Part No.	Description
	COMPLETE CIRCUIT BOARD	
	8-982-645-11	fm (a-m) front end/i-f amp/MPX board (TCB-012BW1), complete
	SEMICONDUCTORS	
D101		diode 1S351M
D102		diode 1T243M
D201		diode 1T22A
D202		diode 1T22A
D203		diode 1T23
D204		diode 1T23
D205		diode 1T23
D206		diode 1T23
D207		diode 1T40
D301		diode 1T22A
D302		diode 1T22A
D303		diode 1T22A
D304		diode 1T22A
D501		diode 10D-2
D502		diode 10D-2
Q101		FET 2SK23A
Q102		transistor 2SC710
Q103		transistor 2SC710
Q201		transistor 2SC710
Q202		transistor 2SC710
Q203		transistor 2SC710
Q301		transistor 2SC634A
Q302		transistor 2SC634A
Q303		transistor 2SC634A
Q401		transistor 2SC403C
Q402		transistor 2SC403C
	TRANSFORMERS, COILS AND INDUCTORS	
CFU201	1-403-150-00	IFT, 455 kHz
IFT101	1-403-821-00	IFT, 10.7 MHz
IFT201	1-403-822-00	transformer, discriminator
IFT202	1-403-820-00	IFT, 455 kHz
L101	1-401-471-00	coil, fm antenna
L102	1-425-547-00	coil, fm rf
L103	1-405-434-00	coil, fm osc
L201	1-407-184-00	inductor, micro 3.3 μH
L202	1-407-585-12	inductor, micro 15 mH
L203	1-407-418-11	shielded inductor, 22 mH
L301	1-425-688-00	transformer, switching
L401	1-401-470-00	bar antenna, a-m
L402	1-405-486-00	coil, a-m osc
L403	1-407-169-00	inductor, micro 100 μH
MU301	1-425-687-00	MPX unit
	CAPACITORS	
	All capacitance values are in μF except as indicated with p, which means μμF.	
C101	1-102-951-00	15p ±5% 50V ceramic
C102	1-102-951-00	15p ±5% 50V ceramic
C103	1-101-118-00	0.01 $\pm^{100}_{0}$% 50V ceramic
C104	1-101-923-00	0.01 $\pm^{80}_{20}$% 25V ceramic
C105		----------
C106	1-102-978-00	220p ±5% 50V ceramic
C107	1-101-923-00	0.01 $\pm^{80}_{20}$% 25V ceramic
C108	1-101-924-00	0.02 $\pm^{80}_{20}$% 25V ceramic
C109	1-101-924-00	0.02 $\pm^{80}_{20}$% 25V ceramic
C110	1-102-862-00	3p ±0.25p 50V ceramic
C111	1-102-947-00	10p ±5% 50V ceramic
C112	1-101-971-00	15p ±5% 50V ceramic
C113	1-101-118-00	0.01 $\pm^{100}_{0}$% 50V ceramic
C114	1-101-923-00	0.01 $\pm^{80}_{20}$% 25V ceramic
C115	1-102-947-00	10p ±5% 50V ceramic
C116	1-101-923-00	0.01 $\pm^{80}_{20}$% 25V ceramic
C117	1-101-924-00	0.02 $\pm^{80}_{20}$% 25V ceramic
C118	1-121-434-00	0.47 $\pm^{75}_{10}$% 50V electrolytic
C119	1-101-118-00	0.01 $\pm^{100}_{10}$% 50V ceramic
C201	1-101-919-00	0.0022 $\pm^{80}_{20}$% 25V ceramic
C202	1-105-665-12	0.0022 ±10% 50V mylar
C203	1-105-677-12	0.022 ±10% 50V mylar
C204	1-101-923-00	0.01 $\pm^{80}_{20}$% 25V ceramic
C205	1-121-395-00	4.7 $\pm^{100}_{10}$% 25V electrolytic
C206	1-127-023-00	1 ±20% 10V solid, aluminum
C207		----------
C208	1-101-923-00	0.01 $\pm^{80}_{20}$% 25V ceramic
C209		----------
C210		----------
C211	1-121-398-00	10 $\pm^{100}_{10}$% 25V electrolytic
C212	1-101-340-00	120p ±10% 50V ceramic
C213	1-102-116-00	680p ±10% 50V ceramic
C214	1-102-822-00	390p ±5% 50V ceramic
C215	1-102-074-00	1,000p ±10% 50V ceramic
C216	1-101-361-00	150p ±5% 50V ceramic
C217	1-102-824-00	470p ±5% 50V ceramic
C218	1-101-923-00	0.01 $\pm^{80}_{20}$% 25V ceramic
C219	1-102-947-00	10p ±5% 50V ceramic
C220	1-101-923-00	0.01 $\pm^{80}_{20}$% 25V ceramic
C221	1-121-398-00	10 $\pm^{100}_{10}$% 25V electrolytic
C222	1-101-924-00	0.02 $\pm^{80}_{20}$% 25V ceramic
C223		----------
C224	1-121-398-00	10 $\pm^{100}_{10}$% 25V electrolytic
C225	1-121-395-00	4.7 $\pm^{100}_{10}$% 25V electrolytic
C226	1-101-923-00	0.01 $\pm^{80}_{20}$% 25V ceramic
C227	1-105-677-12	0.022 ±10% 50V mylar
C228	1-121-398-00	10 $\pm^{100}_{10}$% 25V electrolytic
C229		----------
C230	1-101-924-00	0.02 $\pm^{80}_{20}$% 25V ceramic
C231		----------
C232	1-102-940-00	3p ±5% 50V ceramic
C233		----------
C234		----------
C235	1-121-391-00	1 $\pm^{150}_{10}$% 50V electrolytic
C236	1-101-884-00	56p ±5% 50V ceramic
C237	1-105-677-12	0.022 ±10% 50V mylar
C238	1-105-683-12	0.068 ±10% 50V mylar
C239	1-121-413-00	100 $\pm^{100}_{10}$% 6.3V electrolytic
C240	1-127-019-00	0.1 ±20% 10V solid, aluminum
C241	1-121-398-00	10 $\pm^{100}_{10}$% 25V electrolytic
C301	1-102-117-00	820p ±10% 50V ceramic
C302	1-121-395-00	4.7 $\pm^{100}_{10}$% 25V electrolytic
C303	1-121-395-00	4.7 $\pm^{100}_{10}$% 25V electrolytic
C304		----------
C305		----------
C306	1-105-661-12	0.001 ±10% 50V mylar
C307	1-121-413-00	100 $\pm^{100}_{10}$% 6.3V electrolytic
C308	1-127-019-00	0.1 ±20% 10V solid, aluminum
C309		----------
C310	1-121-398-00	10 $\pm^{100}_{10}$% 25V electrolytic
C311	1-105-681-12	0.047 ±10% 50V mylar
C312	1-105-681-12	0.047 ±10% 50V mylar
C313	1-105-673-12	0.01 ±10% 50V mylar
C314	1-105-673-12	0.01 ±10% 50V mylar
C315	1-127-021-00	0.33 ±20% 10V solid, aluminum
C316	1-127-021-00	0.33 ±20% 10V solid, aluminum
C317	1-121-396-00	4.7 $\pm^{100}_{10}$% 50V electrolytic
C401	1-105-667-12	0.0033 ±10% 50V mylar
C402	1-101-923-00	0.01 $\pm^{80}_{20}$% 25V ceramic
C403	1-101-924-00	0.02 $\pm^{80}_{20}$% 25V ceramic
C404	1-105-669-12	0.0047 ±10% 50V mylar
C405	1-101-924-00	0.02 $\pm^{80}_{20}$% 25V ceramic
C406	1-101-924-00	0.02 $\pm^{80}_{20}$% 25V ceramic
C407	1-121-651-00	10 $\pm^{50}_{10}$% 16V electrolytic
C408	1-121-395-00	4.7 $\pm^{150}_{10}$% 25V electrolytic
	RESISTORS	
	All resistance values are in Ω ±10%, ¼W and composition type unless otherwise indicated.	
R101	1-202-367-00	220
R102	1-202-411-00	15 k
R103	1-202-391-00	2.2 k
R104	1-202-343-00	56
R105	1-202-367-00	220
R106	1-202-403-00	6.8 k
R107	1-202-343-00	56
R108	1-202-407-00	10 k
R109	1-202-387-00	1.5 k
R110	1-202-383-00	1 k
R111	1-202-387-00	1.5 k
R112	1-202-431-00	100 k
R113	1-202-423-00	47 k
R114	1-202-423-00	47 k
R201	1-202-383-00	1 k
R202	1-202-369-00	270
R203	1-202-400-00	5.1 k
R204	1-202-405-00	8.2 k
R205	1-202-383-00	1 k
R206	1-202-383-00	1 k
R207	1-202-367-00	220
R208	1-202-381-00	820
R209	1-202-383-00	1 k
R210	1-244-673-00	1 k ±5% ¼W carbon
R211	1-202-391-00	2.2 k
R212	1-202-399-00	4.7 k
R213	1-202-376-00	510
R214	1-242-665-00	470 ±5% ¼W carbon
R215	1-202-365-00	180
R216	1-202-383-00	1 k
R217	1-202-383-00	1 k
R218		----------
R219		----------
R220	1-202-375-00	470
R230	1-202-343-00	56
R231	1-202-343-00	56
R232	1-202-400-00	5.1 k
R233	1-244-664-00	430 ±5% ¼W carbon
R234	1-202-383-00	1 k
R235	1-202-417-00	27 k
R236	1-202-403-00	6.8 k
R237	1-244-717-00	68 k ±5% ¼W carbon
R238	1-244-703-00	18 k ±5% ¼W carbon
R239	1-244-691-00	5.6 k ±5% ¼W carbon
R240	1-202-371-00	330
R241	1-202-383-00	1 k
R242	1-244-677-00	1.5 k ±5% ¼W carbon

Ref. No.	Part No.	Description
R243	1-244-657-00	220 ±5% ¼W carbon
R244	1-202-389-00	1.8 k
R245	1-202-399-00	4.7 k
R246	1-202-377-00	560
R247	1-202-391-00	2.2 k
R248	1-202-391-00	2.2 k
R249	1-242-675-00	1.2 k ±5% ¼W carbon
R250	1-202-409-00	12 k
R251	1-202-389-00	1.8 k
R252	1-202-343-00	56
R253	1-202-343-00	56
R254	1-202-370-00	300
R255	1-202-387-00	1.5 k
R256	1-202-387-00	1.5 k
R257	1-202-387-00	1.5 k
R258	1-202-325-00	10
R301	1-202-411-00	15 k
R302	1-202-409-00	12 k
R303	1-202-429-00	82 k
R304	1-202-423-00	47 k
R305	1-202-429-00	82 k
R306	1-202-383-00	1 k
R307	1-202-425-00	56 k
R308	1-202-429-00	82 k
R309	1-202-381-00	820
R310	1-202-399-00	4.7 k
R311	1-202-405-00	8.2 k
R312	1-202-365-00	180
R313	1-202-399-00	4.7 k
R314	1-202-387-00	1.5 k
R315	1-202-383-00	1 k
R316	1-202-383-00	1 k
R317	1-202-407-00	10 k
R318	1-202-407-00	10 k
R319	1-202-423-00	47 k
R320	1-202-423-00	47 k
R401	1-202-401-00	5.6 k
R402	1-202-411-00	15 k
R403	1-202-431-00	100 k
R404	1-202-383-00	1 k
R405	1-202-367-00	220
R406	1-202-343-00	56
R407	1-202-401-00	5.6 k

FILTERS

1-403-562-11	fm i-f, ceramic 10.70 MHz (red)
1-403-562-31	fm i-f, ceramic 10.74 MHz (white)
1-403-562-51	fm i-f, ceramic 10.78 MHz (yellow)

MISCELLANEOUS

CR201	1-231-175-00	encapsulated component, 4.7 kΩ + 150 pF
PL1	1-518-129-31	lamp, stereo 4.5V 40 mA
	1-536-286-00	terminal strip, 4-P (ANTENNA)

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